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ABSTRACT

This study focused on the improvement of traditional two-way communication processes in correspondence education through variations on the uses of postal communications, reinforcing the feedback sent by mail with systematic telephone calls, and combinations of mail and face-to-face contacts; the primary focus was correspondence education combined with telephone tutoring. A literature review covers correspondence education, two-way communication, and the telephone as an instructional aid. The experimental design of the study involved two groups of randomly distributed correspondence students. The experimental group received telephone tutoring in addition to the conventional feedback, while the other received only written feedback by mail. Courses included were introductory French and basic economics, both intended for adult learners. Results indicated that students who received telephone tutoring reacted to it favorably; however, no difference was found between the two groups in achievement, amount of study time, or feelings of isolation. Telephone tutoring proved to be of a greater advantage to those students studying a foreign language than to students studying one of the social sciences. (RAO)

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CORRESPONDENCE EDUCATION COMBINED WITH SYSTEMATIC TELEPHONE TUTORING

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

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1 Background

1.1 The general basis of the project

In recent years adult education has been emphasized more than previously in the discussion of education. The reasons are many and varied. The roles and the tasks of adult education in society should principally be to increase democracy and contribute to economic, social and cultural development. Whether this has been attained is open to discussion.

The significant feature of the development in adult education during the 60's is its quantitative expansion. Generally, however, the increase has occurred primarily among people who have already reached a certain level of basic education. This can lead to an increase rather than a decrease of social inequalities which will counteract democratization.

It should be noticed that underprivileged adults often have fewer possibilities to set aside time and money to participate in adult education. In addition, certain socio-cultural traditions inhibit participation in education. For example it can be an impediment to belong to a certain sub-cultural group or to live in a certain place, especially in sparsely populated areas. In order to reduce the gaps in education and accelerate the process of democratization, society must remove barriers of these kinds.

Another condition worth noticing is the rapid expansion of technology within every branch of to-day's society. This necessitates a continual retraining of individuals at all levels of occupational life. New occupations emerge and training is required to prepare the individuals for their new roles. These new roles involve all the processes in one's working situation, including social matters and trade union activities. The individual has a greater possibility to influence his total working situation today than before. In this respect adult education is of importance as it can satisfy the demands mentioned and contribute to a change in economic and social conditions.

Just as adult education serves the economic and social needs of society and the individual it has a responsibility concerning cultural development. These points of view cannot be separated; they form a whole with the common purpose of creating free men in a changing society. The new role of the individual in production, leading among other things to more leisure time, makes demands upon the utilization of adult education for cultural ends also. Urbanization is followed by the establishment of permanent institutions for cultural activities. Underprivileged groups such as the rural population and the handicapped have an equal right to satisfy their need for cultural renewal. The expanding adult education system has great tasks to fulfil in this respect. Different instructional forms must be

utilized in order to remove existing barriers to participation. The mass media and distance bridging education are essential means to this end.

The expansion of adult education means increasing demands on the economy. At the same time increasing investments are being made in youth education. Looked upon as a percentage of the GNP (= gross national product) the world average of expenditure on education rose from 3.57 per cent in 1960 to 5.1 per cent in 1970 (UNESCO, 1973, p 34). However, there are great variations. The developed countries spent 5.41 per cent of their GNP on education in 1970 as compared to 3.22 per cent for the developing countries. The figures indicate that the scope for new economic investments is limited. Nevertheless new contributions must be made in the area of adult education. The economic situation will probably enhance the importance of mass media and distance education as carriers of adult education.

Considering this there are reasons to study the opportunities offered by distance education. The concept distance education has an extensive meaning. A discussion of different ways of interpreting the concept is reported by FLINCK (1975a). The starting-point for the definition given in that report is a proposal by MOORE (1973). He describes distance education as a situation where "the teaching behaviors are executed apart from the learning behaviors" (MOORE, 1973, p 664). The communication between teacher and student has to take place by means of prints, electronics, mechanical or other devices. KAROW & KREIGENFELD (1973) emphasize the importance of combining these impersonal media with personal, direct meetings between teacher and student. Such contacts are an essential element in the great multi-media-projects established in many countries, such as the British Open University and the German Telekolleg and Fernuniversität Nordrhein-Westfalen (cp FLINCK, 1975b). This had led us to the following definition. Distance education is

> ... an educational system where the teaching behaviors are separate from the learning behaviors. The learner works—alone or in a group—guided by study material arranged by the instructor who together with the tutors is in a location apart from the students, who however have the opportunity to communicate with a tutor/tutors with the aid of one or more media such as correspondence, telephone, television, radio. Distance education may be combined with various forms of face-to-face meetings. (FLINCK, 1975a, p 8)

According to the definition above the communication between tutor and student has an essential function in distance education. This communication can be organized in different ways and with different aids. Such variations are being studied in the research project "Two-way communication in correspondence education" carried out at the Department of Education in Lund. Part of the research will be presented in this thesis.

The origin of the project was the answers to a questionnaire distributed to the member schools of the European Home Study Council (EHSC). According to a definite majority of the answers two-way communication was an essential prob-

lem to study in research on correspondence education. Previous research indicated that this area was a critical one – both tutors and students were dissatisfied with existing arrangements for two-way communication. (see GLATTER & WEDELL, 1971; HARRIS, 1972). The area had been subjected to research only to a limited extent (cp CHILDS, 1971). Besides, as two-way communication in correspondence education seems to be a relatively unique problem, it is not always possible to transfer research findings from other fields of educational research.

The aim of the research project is to study how two-way communication in correspondence education can be improved (cp BÅATH, FLINCK & WANGDAHL, 1978a) by (1) variations of the traditional postal communication, (2) reinforcing the postal communication with systematic telephone calls, and (3) combinations of postal communication with direct, face-to-face contacts. Around each of these problems a series of experiments has been built up. Each series will be reported separately. The theme of this thesis is correspondence education combined with telephone tutoring.

1.2 Correspondence education and society

Correspondence education is the most frequent as well as the oldest form of distance education. That it is a form of distance education is quite evident from the definition given of that concept (cp p 10). Its role as an instructional form in a combined system of distance education will be discussed in the next section.

The earliest example of correspondence education including two-way communication is found in Great Britain about 1840 (see BÅATH, FLINCK & WANGDAHL, 1978a). During the second part of the 19th century correspondence schools grew up in Great Britain, Germany and the United States. At the end of the century the first school was founded in Sweden and in the early 20th century Norway had its first correspondence school.

The first courses offered were vocational courses taken by students in need of new knowledge to gain promotion in their occupations. Later on language courses as well as courses at high-school and college level were more generally introduced.

From the beginning the intention behind the development of correspondence courses was undoubtedly to cater for individuals who for certain reasons – geographical or social – lacked the opportunity to participate in conventional education. MACKENZIE, CHRISTENSEN & RIGBY (1968) hold that the American development of correspondence education "owes much to the frontier spirit ..." (p 23). Probably, the creators of the first correspondence courses were inspired by a true pioneer spirit. Covering new sectors of education they may have generated the development of more conventional courses as well. According to EDSTRÖM (1970) correspondence education is "... one of the educational tools of a society in transition." (p 109).

Correspondence education has also been utilized to supplement conventional

education so as to offer a broader and more complete range of educational opportunities. Mainly two situations have called for this solution. On one hand correspondence courses have been used in districts where the students were few and the local teachers could not teach all the subjects wanted. This applies to youth education as well as to the education of adults. On the other hand correspondence education has made it possible for students to choose a form of study adaptable to their working conditions, personal demands etc.

It appears from what was said above that correspondence education can supplement conventional education in a varied and appropriate way. Therefore it seems obvious that schools offering these opportunities are now more and more often supervised by public authorities. The first correspondence schools were founded on private initiative and most schools were for a long time carried on privately without government aid. However, development has led to a situation where private schools go public or are under the supervision of official authorities.

The primary target group for correspondence education is and always has been adult students (JOHNSTONE & RIVERA, 1965; WEDELL, 1970). Correspondence courses can contribute to adult education in different ways. During recent years adult education has been linked up very closely with the ideations behind the concept permanent education (see e.g. WEDELL, 1970; SIMPSON, 1972; LOWE, 1975). Permanent education - or lifelong learning/education - is intended to cover education during the entire lifetime of an individual, from childhood up to old age (DAVE, 1972). An essential part of it will take place during adult years and be parallel with gainful employment. In this situation correspondence education can be a convenient instructional form. WEDELL (1970) stresses the importance of correspondence education in certain vocational training courses, especially in the beginning of such training. In addition, many people choose correspondence education for financial reasons, e.g. when family responsibilities complicate participation in conventional full-time education.

It can also be consistent with a certain ideology to combine studies and employment. In this case, too, correspondence education is appropriate. Thus, in the Soviet Union almost half the students of the universities and equivalent schools study correspondence courses (cp NORDKO *et al.* 1968).

It was previously pointed out that correspondence education could be used to bridge geographical distances. This seems logical and it is therefore surprising that WEDELL writes that correspondence students

> ... tend to be concentrated in the more urban areas of a country and to predominate in areas where the commercial life of the country goes on. This characteristic has only recently been established and has come as something of a surprise to those who have believed that correspondence education was appropriate mainly to those living out of reach of opportunities for face-to-face tuition. This is clearly not so. The flexibility of correspondence education makes it attractive to people in urban areas and the employment opportunities in occupations for which it is possible to prepare by correspondence are greater in urban areas. (WEDELL, 1970, s. 33)

The statement indicates how correspondence education can be complementary to conventional education, providing the students with an opportunity to select their instructional form of interaction.

1.3 Correspondence education as an instructional form

In correspondence education the student studies by himself, without direct contact with a tutor, and with the help of specially produced study material (cp BÅATH, FLINCK & WENGSTRÖM, 1975a). To facilitate communication between tutor and student the study material is supplemented with written assignments which the student is to send by post to the tutor for examination. The written assignments are usually called assignments for submission. The tutor returns the examined and corrected assignments to the students. This two-way communication, which is comparatively small in educational contexts, is discussed more in detail in a later section.

The study material used in correspondence education is not structured in the same way as material used in conventional classroom education. Functions fulfilled by a teacher in a classroom must be worked into the printed study material. The content must consequently be well structured and self-instructional. Explanations and elucidations normally given by the teacher in a classroom must be included in the material written for correspondence students. The content must, moreover, support motivation as it provide the student with assignments for practice and self-test.

Generally the study material is arranged according to one of two models. The first model implies *full-covering study material* which includes all the information necessary to study the course. Facts, exercises, examples, recapitulation material and self-checked tests are presented in a well-structured whole. According to the second model the study material consists of conventional textbooks supplemented by separately produced study guides. In this case the study guide structures the studies and provides instructions for the treatment of the subject-matter in the textbooks. Exercises, examples, recapitulation material and self-checked tests are collected in the study guide. Together with the study instructions they make up the steering instrument of the studies.

Apart from these two arrangements which are pure models there are variations in which the basic models are combined and varied.

Being primarily based on the written word the study material in correspondence education differs characteristically from the instructional media that contain oral, face-to-face procedures. The construction of a correspondence course is dealt with in many handbooks where practical advice is given on how to arrange the study material (cp GIMO, 1960, ERDOS, 1961, WENTWORTH, 1967, 1968, 1969, PERRATON, 1972, BECKMANN, 1976). Further, WACKSMAN, CHRISTENSEN & RICHEY (1968) have expressed valuable views on correspondence education as an instructional form and identified its advantages and disadvantages.

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The questions are provocative and the answer could be just one. There is no reason to overestimate correspondence education like this, but the questions stress some advantages of this instructional form.

One essential distinctive feature of correspondence education is the circumstance that it is a two-phase process (CHILDS, 1971a). The first phase consists of the student's work with the study material – facts, exercises, self-check-tests, and assignments for submission. The second phase implies that the tutor receives the assignments for submission, corrects and comments on them, and returns them to the student.

According to CHILDS, the sharp break in the learning cycle creates problems. When the student has completed his assignments for submission, he considers himself to have accomplished a section of the study course and starts the next one. Later, when the examined assignments for submission return, that very section is no longer in the focus of his attention. CHILDS (1971a) also points to a second problem. Mostly the writer of the study material is not the same person as the tutor who examines the assignments for submission. If the tutor does not sympathize with the content and the disposition of the study material, problems are likely to arise.

A basic question is how correspondence education can be connected with a general educational theory or philosophy of education, and how it relates to different theories of learning. It is beyond the scope of this thesis to analyse theoretical schools, but something will be said about the practical applications of such theories with relevance to correspondence education.

HILGARD & BOWER (1975) review several theories of learning. In this context their concluding reflections on practical applications are interesting. They summarize some general principles which are particularly emphasized within the different theories. If we consider these principles in the light of how correspondence courses are usually constructed, we find it impossible to assign correspondence education to a specific learning theory. As a matter of fact, all principles could be applied to correspondence education. Some examples of HILGARD & BOWER's generalizations might illustrate this statement.

A. Principles emphasized within S-R theory.

   1. The learner should be *active*, rather than a passive listener or viewer. The S-R theory emphasizes the significance of the learner's *responses*, and "learning by doing" is still an acceptable slogan.

   2. *Frequency of repetition* is still important in acquiring skill, [illegible] in bringing enough over-learning to guarantee retention. ...

   3. *Reinforcement* is important; that is, repetition should be under arrangements in which desirable or correct responses are rewarded. ...

...

B. Principles emphasized within cognitive theory.

1. *The perceptual features* according to which the problem is displayed to the learner are important conditions of learning (figure-ground relations, directional signs, "what-leads-to-what", organic interrelatedness). ...

...

2. The *organization of knowledge* should be an essential concern of the teacher or educational planner. Thus the direction from simple to complete is *not* from arbitrary, meaningless parts to meaningful wholes, but instead from *simplified wholes to more complex wholes*. ...

3. *Learning with understanding* is more permanent and more transferable than rote learning or learning by formula. ...

C. Principles from motivation and personality, and social psychology.

1. The learner's *abilities* are important, and provisions have to be made for the slower and the more rapid learners, and for those with specialized abilities.

...

3. Learning is *culturally relative*, and both the wider culture and the subculture to which the learner belongs may affect his learning.

(HILGARD & BOWER, 1975, pp 608-609)

There is a great danger in constructing and using generalizations and summaries of this kind, but they do show the difficulty of assigning correspondence education to a specific theory of learning.

In a separate report from the research project "Two-way communication in correspondence education" BÅATH (1978) has proved that correspondence education can be applied within a number of instructional models based on different educational theories. The report indicates that correspondence courses can be constructed according to many different models, but that the product will be different types of correspondence education depending on the underlying theory.

It must be more essential to emphasize that correspondence education in itself is an instructional form. The question is then if this form differs from other instructional forms. The answer might be both yes and no. MACKENZIE, CHRISTENSEN & RIGBY (1968) make the following statements:

> Much confusion stems from the popular misconception that correspondence instruction is somehow different in kind from resident or institutional instruction. This simply is not so. Correspondence instruction shares the same goals and the same educational philosophy as many different methods of instruction. It differs from them primarily in the means, in the method itself. (MACKENZIE, CHRISTENSEN & RIGBY, 1968, p 5)

> Correspondence instruction is an instructional method, not a total educational experience. This limitation should be recognized by anyone advocating study exclusively by correspondence, particularly for young students. (MACKENZIE, CHRISTENSEN & RIGBY, 1968, p 164)

Against this opinion, PETERS' (1971) view can be set forth. He bases his presentation on a study conducted in Berlin (PETERS, 1965), later on discussed in a broader perspective (PETERS, 1973). He argues

> ... it simply does not work when you try to apply traditional categories of accepted instructional theories to correspondence instruction on the grounds that it is, after all, also instruction. The reason for this is that these categories were developed by analyzing, and for the purpose of describing and defining, *oral* instruction and not *written* instruction. To many this difference seems to be trivial and yet it is fundamental, if you consider its consequences. (PETERS, 1971, p 224)

Despite these apparently incompatible views about correspondence education we might discover a fundamental consensus. It is the means used to transfer information which separates different instructional forms. The means in correspondence education is primarily the written word. This must be arranged so as to transmit a message without the elements enriching the presentation in a classroom—gestures, accentuations, pauses etc. It should also create motivation, arouse an interest, activate, visualize. The instruction will take place at a distance and be directed at a large number of students with varying qualifications and experience.

Conditions like these lead us to look at correspondence education in a perspective of educational technology, where a systematic planning of the instructional units is essential. PETERS (1971, 1973) holds that correspondence education can be regarded as an industrialized form of education. He draws a parallel with other forms of industrialization and finds many surprising resemblances, as in the following summing-up:

> Neither process can start without a previous period of careful planning by experts, and without specialization by division of labor, that is, by dividing the many functions of the teacher or the worker and assigning them to a number of specialists or machines. Both processes rely on the use of technical devices, machines, and even computers, both apply the principles of the assembly line and of mass production, both need and use scientific methods of control in order to improve the teaching or production process while in operation. (PETERS, 1971, p 225)

Before continuing to discuss PETERS' view it may be interesting to quote again a prominent spokesman for correspondence education who opposes the technological viewpoint very sharply. DELLING (1976) considers that by "teaching" we simply provide the student with a behavior which the authorities consider to be desirable. He is very categorical when he expresses his opinion:

> ... 'to teach' is nothing more than an illusion, artificially kept alive by people who either understand nothing about learning – or, who have an interest in preventing others from learning. (DELLING, 1976, p 20)

Instead, DELLING proposes the establishment of a "helping organization" to assist the student at his request. The only function of such an organization should finally be that of an information and documentation centre, e.g. a good library.

Here DELLING brings into focus the learner and the central position of learning in educational contexts. This position is self-evident. To emphasize the central position of the learner and the learning in particular an educational technology approach might be the feasible way. The reasons are many but two fundamental ones deserve to be mentioned.

The educational technology approach falls back on the American educationalist TYLER (1950) who introduced a strategy for the construction of educational programs. His work has later been revised and modified but his fundamental ideas are still intact. HOULE (1972) has summarized them in an excellent way:

> In any program, the first task is to define purposes by considering studies of the learners, of contemporary life, and of the suggestions of subject specialists. Such data as may be derived from these studies should be screened by the educational and social philosophy of the curriculum builder and by the findings of the psychology of learning in order to produce specific objectives which should guide instruction. These objectives should be stated in a fashion which makes them useful in selecting learning experiences and guiding teaching. Such experiences are then chosen according to certain principles and to conform to various categories of goals and are organized in such a way as to produce desired results. The processes of evaluation should be so designed as to measure the degree to which identified objectives have been achieved, and that knowledge should be used in future planning. (HOULE, 1972, p 14)

Simplified, these thoughts can be expressed by the terms goal–process–evaluation. The same concepts form the basis of PETERS' (1971, 1973) view of correspondence education as an industrialized form of education. This approach is a prerequisite for the effective production of correspondence courses for a very large number of students. PETERS makes comparisons with industrial production where planning, manufacturing and control of the products follow a strict pattern. As the purpose of correspondence education is to provide education at the same time for a great number of students at a great number of locations, a well-planned and thoroughly worked out instructional form is a necessity. This is the background of PETERS' conception which is evident from his definition of correspondence education:

> Correspondence study is a method of imparting knowledge and skills which is rationalized by the application of division of labour and organizational principles as well as by the increased use of technical media, especially for the purpose of reproducing objectivated teaching behavior which makes it possible to instruct great numbers of students at the same time wherever they live. (PETERS, 1971, p 226)

Systematic work according to the thoughts of PETERS will result in an arrangement of learning which makes it a highly qualified educational process. The learner

will benefit from a presentation of the subject matter effected by a number of experts, who can be utilized in the production in a rational way. The product will also be characterized by optimal learning sequences through the entire course. These conditions are very difficult to obtain in conventional classroom education and must be considered as one of the advantages of preproduced educational material. They bring the learner and his task of learning into the centre of the educational process.

The criticism delivered among others by DELLING (1976) and implying that "teaching" only provides the learner with a number of behaviors desired by an authority is incorrect. It is, of course, correct that the learner is mainly provided with those behaviors that the course is intended to teach. It is also correct to ask who regards these behaviors as desirable. But the fundamental point is that a correspondence school has an extensive range of courses, all with declared goals which the presumptive learner can acquaint himself with so that he can select courses leading to a behavior that he himself considers essential for his own development. This option is strongly reduced in conventional education.

In the discussion in this section the arguments in favour of correspondence education have predominated. From an educational-didactic point of view it is an instructional form with distinct potential advantages.

1.4 The two-way communication

The foregoing section elucidated the function of the study material in correspondence education and demonstrated—with the help of CHILDS (1953) and PETERS (1971, 1973)—the didactic strength of this instructional form. Its weakness lies probably in the lack of personal relationships. Being an "industrialized" form of education, it suffers from reduced human contacts which occur only in the feedback stage of the process. Some human contact is built into the system of correspondence education by means of the assignments for submission, but such contact is normally based on the written word. The arrangement involves a temporary delay in the feedback and the communication is mainly non-recurrent. It takes place just once—the student answers the assignments for submission, the tutor examines and comments on them. No further communication occurs regularly. The student is, however, formally entitled to communicate with his tutor on his own initiative.

These conditions are not wholly satisfactory from an educational point of view. In a classroom there is normally a differentiated social interaction between teacher and students, and between students. Pure correspondence education lacks this interaction. Classroom interaction has been penetrated above all by FLANDERS (cp AMIDON & FLANDERS, 1963; FLANDERS, 1960, 1964, 1970). As his observations and conclusions are based on what is going on in a classroom, they are not directly applicable to the situation in correspondence education. Still, a careful general interpretation of FLANDERS' interaction analysis might be of value in discussing modifications of correspondence education.

FLANDERS is of the opinion that what happens in a classroom always occurs in a cycle, i.e. events and situations are regularly recurrent. FLANDERS' cycle has six steps.

> First, an intellectual difference or problem is created. Second, the major dimensions of the problem are identified, and third, relationships within the problem are isolated. Fourth, work occurs—such as the gathering of information, the application of a formula, or the trial solution of a problem. Fifth, progress is evaluated and tested. Sixth, the new knowledge is applied to additional problems and interpreted in some meaningful way. (FLANDERS, 1964, p 203)

The interaction can occur in different manners. FLANDERS has classified teachers' and students' communication behaviors in ten categories. Two behaviors are basic: the teacher talks or the student talks. The teacher's talk implies a direct or an indirect influence on the interaction. Direct influence—initiation—occurs when the teacher is lecturing and when he gives directions, criticizes or passes judgement authoritatively. In these behavior categories the teacher talks more than the students and is therefore dominant in the classroom. Indirect influence—response—occurs when the teacher accepts feelings, praises or encourages, accepts or uses student ideas, and asks questions. This means an expansion of student participation. The student influences interaction even more by his own talk which occurs when he answers questions or initiates problems (cp AMIDON & FLANDERS, 1963; FLANDERS, 1970).

The directness or indirectness of the teacher's influence in different parts of the cycle affects two aspects of learning—the student's dependence and his achievement. FLANDERS defines dependence in terms of the degree of concern the student has for pleasing the teacher. A dependent student is more concerned about which method the teacher wants to use than about which method will solve the problem. Sustained direct influence by the teacher results in increased dependence. The directness or the indirectness of the teacher's influence increases or decreases achievement. Indirect influence by the teacher results in increased achievement. Besides, the earlier in the cycle of classroom learning activities the expansion of student participation—indirect influence—occurs, the more effect it will have on decrease of dependence and increase of achievement (cp FLANDERS, 1964).

Thus, it is the indirect influence of the teacher that has the best effect. The possibility of using the teacher's indirect influence is almost lacking in pure correspondence education. This is due to the fact that there is no immediate contact—visual or auditive—in the pure form. A modification of the two-way communication in correspondence education could furnish better prospects of attaining this indirect influence in the interaction.

Both in conventional classroom education and in correspondence education two-way communication between teacher and students is one of the fundamental principles for instruction. In correspondence education there are actually two

kinds of communication. In a previous report from this research project BÅATH (1976) discusses this circumstance. He starts from GRAFF (1965b) who distinguishes between two communication circles—the inner circle and the outer circle. The inner circle represents a communication where the student communicates with the study material. It occurs with the help of exercises, text, self-checked tests etc. GRAFF considers this to be the core of correspondence education.

The outer circle represents the two-way communication where the student responds to the assignments for submission and sends them to the school, which returns them corrected and commented on. Starting from GRAFF this two-way communication—the outer circle—gives rise to a condition where the student becomes less autonomous and more dependent on a teacher's guidance and control than if communication had occurred only within "the inner circle".

Two-way communication has several functions in an educational context. It makes it possible to give feedback to the student. The examination and the correction of the assignments for submission provide the student with information about how he has comprehended and mastered the content of the course. It also makes it possible to evaluate his achievements. Probably the two-way communication brought about by the assignments for submission is of great significance for the student's motivation. Finally, it has the function of "getting in touch" which can give the student a feeling of not studying in total isolation.

By tradition the two-way communication in correspondence education has taken place by means of letters sent between tutor and student. Thus, the communication is based on the written word also in this respect. How the postal communication might fulfil its educational functions better than is usually the case is dealt with in another part of our research project.

Some research has been carried out in this domain. Problems investigated are the students' attitudes to assignments for submission (cp GRAHM, 1969; KUSTERMANN, 1970), the submission density (cp BÅATH, 1975), and different modes of commenting on the corrected assignments for submission (cp REKKEDAL & LJOSA, 1974). BÅATH (1976) has reported opinions of and attitudes to the assignments for submission, and given a survey of various practices in making use of postal communication at a number of European correspondence schools. The results of this part of our research project will be published in a separate thesis.

Principally, the advocates of correspondence education are split in two factions with reference to modifications of the two-way communication. This is further discussed by WÅNGDAHL (1977) in a report about correspondence education combined with face-to-face contacts. One group contends that it is possible to attain an educational goal by pure correspondence education alone, i.e. exclusively by postal two-way communication (cp HÜBNER, 1964; GRAFF, 1964, 1965a). The other group of researchers is of the opinion that pure correspondence education must be complemented by improved and changed arrangements for the two-way communication. They maintain that the students suffer from isolation when studying on their own. This faction also has German spokesmen (VOGT, 1966; HAAGMANN, 1970; BOLTE, BÖHME & SCHWIER, 1974). WÅNGDAHL de-

clares that this discussion has been carried on in other countries, too, but not so specifically. Outside Germany the problem of the social isolation of correspondence students has been discussed only in general surveys (cp WEDEMEYER & CHILDS, 1961; CHILDS, 1971a, 1971b).

In the preceding section the advantages and disadvantages of correspondence education were commented on, starting from CHILDS (1953). He reports a number of advantages designated instructional advantages, while the disadvantages fall back on what he calls "situational disadvantages". The latter concept involves the social isolation. One way to eliminate this isolation is to expand the two-way communication. This can be done in different ways.

Quite often correspondence education is combined with face-to-face meetings. Various arrangements are being practised from boarding-school to evening-classes (cp WANGDAHL, 1977). Many of the large multi-media projects as the British Open University and Telekolleg and Quadriga Funkkollegs in the Federal Republic of Germany have systematized these meetings and made them a component in the educational system (cp FLINCK, 1975b). The education is based on correspondence material but is supplemented among other things by meetings and conferences for tutors and students. In the socialist countries where distance education is extensive, great importance is attached to such meetings.

Meetings of this kind occur at ordinary correspondence schools, too. In Norway combined correspondence education has been running since the middle of the 1960's. In Sweden as well as in the United States combined correspondence education has been used at youth school level, as supervised correspondence study. In the Federal Republic of Germany certain correspondence schools arrange correspondence education combined with face-to-face meetings (cp WANGDAHL, 1977).

The effects of such activities will be discussed in a third thesis from the research project. However, it is worth noticing that the students appreciate this personal contact. The results indicate that the personal contact with a tutor is considered most essential and supposed to be of a positive value (see KUSTERMANN, 1970; CHILDS, 1971b). If this contact reduces the social isolation or if it has above all an educational function is not made clear. Both functions are essential, and arrangements to meet both of them have to be made (cp WEDEMEYER & CHILDS, 1961). Further discussion of this question is provided by WANGDAHL (1977).

Other efforts to improve and reinforce two-way communication in correspondence education are made by means of electronic devices. Broadcasting and television have been used along with correpondence education (cp FLINCK, 1975b), but with existing technical equipment the possibilities of *two-way* communication are strictly limited. Exceptions are two-way communication-radio–which has been used in education (cp HUGHES, 1971)–and cable television (cp MOLENDA, 1972). But these devices have been used only to a limited extent mainly because of the costs of installation (cable television) and the limited technical space on the air (two-way communication-radio).

Other electronic devices capable of expanding the two-way communication are audio-tapes. Audio-tapes are in many cases a part of the instructional material, above all in language courses, but they have also been tested as a supplement to the assignments for submission. SCHMIDT-SOMMER & PETERS (1971) have carried out an experiment where the students were to record their answers to the assignments on tapes and send the tapes to the tutor for examination. He corrected and added comments to the tape and returned it to the student. Similar experiments have been carried out in other situations (cp GOODMAN, 1972). When audio-tapes are used the two-way communication is based on the spoken word but the contact is somewhat delayed.

Two-way communication based on the spoken word and transmitted by an electronic device without delay is made possible by the use of the telephone. This possibility has been tested in the experiments to be reported in this thesis.

1.5 The telephone as an instructional aid, especially in connection with correspondence education

The telephone as an instructional aid has been described previously in a separate report from the research project (cp FLINCK, 1975a). In this context only a brief presentation will be made.

By surveying literature and research reports we found that the telephone had been used for educational purposes in four principal modes. FLINCK (1975a) describes them as follows:

> *Teleteaching* is operated by means of a two-way transmitter (telephone) placed in a classroom, and enables a sick or handicapped student to keep up with his class work without being physically present in the classroom. The student can at home hear all that is going on in the classroom, and he can indicate by means of a signal when he wants to speak and answer questions. When he speaks everybody in the classroom is able to hear what he says, as if he were present.
>
> *Telelecture* also operates by means of a two-way transmitter. A teacher can through the use of the telephone – located anywhere in the country – give a lecture – simultaneously – to one or several groups of students located in different places. The teacher's voice is amplified in the classroom, and the students can communicate with the teacher through a series of microphones connected to the telephone line.
>
> *Dial-access* is an information service system that provides a person with brief summaries on different topics. The summaries are recorded on tape and available by dialling an operator or a computer who switches the call to a playback machine and inserts the tape cartridge requested. Most dial-access systems operate in connection with libraries.
>
> *Teletutoring* enables a student by means of a telephone to get in touch with his tutor for individual help in his studies. The student is studying indepen-

dently with the help of prepreduced study material such as a correspondence course. The tutor then calls the student – or the student calls the tutor – and they discuss the work. This two-way communication is always between one student and one tutor. (FLINCK 1975a, p 13)

When studying reports in which telephone experiments are described it should be noticed that these experiments have been carried out more or less scientifically. In many cases the procedures of the experiments are presented in detail and the results of a small evaluation are reported.

Comparing the four different modes of using the telephone we found that *telelecturing* was the most commonly used. Telelectures have been established according to three alternative models.

1. an external speaker presenting an address to a single group;
2. an external speaker presenting an address to a number of groups in a number of site locations;
3. interaction of a number of speakers/audiences at a number of different site locations.

(FUZZUOLI, 1970, p 4)

Experiments according to model 1 have been reported by a number of researchers (BEATTIE & FRICK, 1963; MANDELBAUM, 1966; BLACKWOOD & TRENT, 1968; PUZZUOLI, 1970; &RUCK & TVERSKY, 1971; GOLD, 1973; HART, 1973). In a majority of these experiments the method was used because the school lacked qualified teachers. Telelectures are an advantage from an economic point of view, and opinions about the method have been positive from both students and teachers. No differences in achievement have been proved when students in a class taught at a distance by telephone have been compared with students in a class taught simultaneously by a classroom teacher.

The second model where the teacher simultaneously addresses several classes located at different places does not differ much from the previous model. The background – lack of qualified teachers – is the same. Model 2 has been tested and evaluated in more studies than model 1. The evaluations have been more penetrating. MADDEN (1964, 1967), DAVIS (1966), O'DOAN (1966), CLARKE (1970), HEILIGER (1972) and PUNWAR (1972) report that the method is inexpensive and that the students willingly participate in this kind of education. Both COOPER & LUTZE (1970) and REGAN & HAASCH (1970) report from so-called refreshment courses arranged for inactive nurses who wanted to go back to work after being non-practising for many years. The effects of the telelectures were positive and more of the nurses returned to work than was expected.

Other studies have used a procedure with control-groups. Classes at different locations have been taught by telelectures while the same teachers have taught on-campus classes simultaneously (NUNLEY, 1965; BOSWELL, MOCKER & HAMLIN, 1969; EDELMAN, 1969; SPEARS, 1971; HOYT & FRYE, 1972; STUTZMAN & GRIGSBY, 1973). None of these studies has indicated any differences in achievement between telelecture students and on-campus students. The attitudes of the students taught by telelectures are positive.

25

The third model - connection of a number of speakers/ audiences at a number of different site locations (*cp p. 25*) - has preferably been used in the form of telephone conferences. The technical equipment used here is of different kinds. Both loud-speaking telephones and low-speaking telephones with connected headphones and microphones have been used. Above all this method has been used in the United States (*cp* PARKER, 1972, 1973, 1974, 1976; LEMBERGER, BALASKOFF & SIEGAL, 1976; WILENSKA & WISE, 1976; VERNON, 1976), but also in the British Open University certain experiments with teleconferences have started (TUROK, 1974, 1976; TUROK & DANIEL, 1975; HOLLOWAY & HAMMOND, 1976). In Sweden prototypes for conference telephones have been worked out. They have been used to a certain extent (KONFERENSTELEFONI, 1976). The advantage of teleconferences is that study groups located at different places can be connected over the telephone. In this case the activity developed within a group is utilized at the same time as several groups and a well qualified supervisor are brought together by means of technical devices.

It is also possible - without advanced transmission techniques - to supplement the auditive transmission with visual information. This can be done by a telewriter or an electrowriter. BRETZ (1971) points out that this transmission technique has been available as long as the auditive transmission. EDELMAN (1969), HAGENY, DAVIDSON & PRICE (1969) and STUTZMAN & CARLSBY (1973) report experiments where this method was used. According to the reports the effectivity was equal to that of conventional on-campus education.

Teletutoring as an instructional method has both advantages and disadvantages. Disadvantages reported are mostly of a technical and practical nature, such as unsatisfactory transmission and the administration of the technical equipment. The greatest disadvantage reported, however, is the lack of face-to-face contact between teacher and student. In a classroom situation a teacher can adapt his presentation to the verbal and non-verbal reactions of the students. This opportunity does not exist in teletutoring. Despite these drawbacks, evaluative studies prove that the effectiveness with reference both to achievement and to attitudes is as high as or as a traditional classroom lecture. The method has, however, another great advantage which PARKER (1972) summarizes in the following way:

> It provides for truly "continuing" education, enabling participants to receive limited amounts of information frequently ... There is great economy in time and money for the participants and the faculty. Neither is required to travel significant distances or spend significant amounts of time away from occupational or teaching responsibilities.
>
> Departments are able to reach entirely new audiences which had been neglected previously ... ETMCA enables us to reach isolated professionals who would otherwise be in an educational vacuum. (PARKER, 1973, pp 14-15)

A second mode of using the telephone in education - *dial-access* - makes great demands on the technical equipment. The method implies a system of information with no direct contact between the receiver and the dispatcher. A person calls a

various telephone number and is provided with information about various subjects by means of pre-recorded tapes. Most of the dial-access systems are connected to a library.

The first dial-access system, introduced in Wisconsin in 1961, was connected to a medical library. The purpose was to provide physicians working in remote areas with immediate access to current, authoritative medical information. 200 different tapes were available, each tape being 6-8 minutes long. The tapes contained information of an emergency nature or concerned current therapy. A similar service was later on developed for nurses in Wisconsin (MILES, 1970, 1970), but the method has also been introduced in other centres and is used for the benefit of medical students and the public as well (e.g. REUTER, 1972, PEARSON, 1973).

Attempts to use dial-access at school levels and with school subjects have been reported (VANDERWEIL & FOLEY, 1970). One purpose of the project described in that report was to reduce educational impediments. "Internal" impediments, such as physical handicaps of students making it impossible for them to reach the classroom, and "external" impediments caused e.g. by the fact that all people do not learn equally well from the same communication channel. A telephone system similar to dial-access has been used to assist students in foreign languages (TAMCHUCK, 1968). The students were given ordinary lessons in French and Spanish at school, but in the afternoons they could call a particular telephone number to have a dialogue drill for three minutes. The drills were pre-recorded and only one drill a day was available.

So far the attempts made with dial-access have been of limited significance for primarily educational purposes. But they must be regarded as educational events and might be further developed in a distance education system. A drawback of dial-access is the big initial costs.

The third mode of using the telephone in education, teleteaching, is the oldest educational use of the telephone. It was introduced in 1939 (BAIO & BRICKS, 1972) for students who for some reason, e.g. illness, could not be present in the classroom for a long period of time. By means of a telephone the student could participate in the classroom lessons. Several experiments with teleteaching have been carried out since 1939, but no evaluative studies are reported. Many articles and reports describe the attempts and the writers regard the method as very successful (e.g. DUDDELL, 1967, LEWIS, 1966, LOCKS, 1969, BAIO & BRICKS, 1972). One reason for the lack of evaluative studies might be that only a few students take part in teleteaching.

The fourth mode of using the telephone in education is telephone servicing (telitutoring). It permits a student to get in touch with a tutor by means of a telephone and have individual support in his studies. The method differs from the other telephone methods in two ways. First, the student is supplied with the basic information by other means than the telephone, e.g. by textbooks, a correspondence course, broadcasting, television. The information by telephone is thus a supplement. Secondly, the support given is individual, adapted to the needs of the student.

Some of the great multimedia systems have used telephone tutoring in a similar manner to allow their students to get in touch with their tutors (e.g. FERNUNI, 1975b). In Tübingen in the Federal Republic of Germany the students were able to telephone questions to the television teacher on certain days. The questions were answered directly on the television screen (BRUNELL, 1971). In Chicago TV College the students could also get in touch with their television teachers by telephone. Each week a television teacher was available for two hours and, besides, a group teacher was available by telephone calls almost every day. The students were allowed to discuss subject-related problems. The intention was to give the student a feeling of not being completely isolated (SCHRAMM/RIVLIN & PEDERSEN, 1971; PEDERSEN & RIVLIN, 1975).

At the British Open University, too, a project has started according to me the telephone as a supplement to the other media used (TUTION, 1975). The attempt is based on tele-conferencing (TUTION, 1975). The telephone is used as a supplement to other sources of information: a correspondence course, textbooks, television and radio programs, but the support is not individual. The students work in groups and a number of groups are connected by telephone.

Attempts to give individual support at a distance without any other source of information than the telephone have been reported in quite another context. Thus (SIMONSEN, LEE & LEE (1975) describe two pilot studies where the telephone was used in family planning service. Persons could call a counsellor to get advice in family planning matters. The main information was given individually by telephone.

In Virginia, USA, a project called (title) (Direct Instruction for Adult Learning) was set up in 1975. The telephone was used both as an instructor and as a reporting tool. BYRD (1977) describes the program and to an which the

> ... to benefit persons who, it was believed, normally would enroll in Adult Basic Education but who could not attend regular classes. ... one of the main deterrents to continuing education by these adults was the lack of transportation ... dependent children, available in the home, and work schedule in conflict with the class schedule (BYRD, 1977, p. 123)

The two programs started with programmed material available and used in connection with telephone instruction. The students worked with the material at home with a correspondence course -all answered assignments. These were sent to the school, corrected and returned to the student. Then the student could call the tutor to get assistance and if he did not call the tutor did. The evaluation of the program is divided as on hand that many students hesitated to call their tutors, and on the other that students with a low reading level had problems in using the programmed material.

The evaluation resulted in a revision of the program. Among other things, students who had problems with the programmed material were invited to call the school and have a recorded lesson transmitted by telephone. Further, as the school had tutors on duty 12 hours a day, the students when calling could get immediate

[illegible]

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[illegible]

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[illegible]

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have been studied at Hermods, a Swedish correspondence school (BEIJER, 1972). Three alternatives were presented to a group of students enrolled at Hermods, and they were asked to select the alternative that was most convenient to them. Traditional correspondence education combined with telephone instruction was chosen by 23 per cent of the students, 36 per cent chose traditional correspondence education combined with face-to-face instruction, and 33 per cent preferred traditional, pure, correspondence education (BEIJER, 1972).

Within our research project BAATH (1976) has carried out and reported on a questionnaire survey, including 34 European correspondence schools. In 23 of the schools (67 per cent) the students were allowed to telephone to the school to discuss difficulties they met with. Only few students used the possibility, however. Out of the 23 schools ten reported that the students called "seldom", eleven that it occurred "sometimes", and only one that it occurred "frequently".

Another question in the same questionnaire concerned systematic telephone instruction on the initiative of the tutor. This use of the telephone turned out to be rare. Three schools (9 per cent) stated that they gave instruction by telephone, but only in a few courses. Consequently very few European correspondence schools utilize the telephone in their educational programs. Some students are allowed to call up their tutors to discuss subject-matter problems but the schools do not systematize the use of the telephone.

In a pilot study in our research project we carried out an experiment with systematic telephone tutoring (FLINCK, 1976b). At the Department of Education at the University of Lund a course in Educational Technology was arranged for distance education. The pilot study was directed towards examining how to make a content analysis of telephone calls exchanged between tutor and student. Information about the students was collected too. As the course was arranged as an experiment in cooperation with the Office of the Chancellor of the Swedish Universities the number of students had to be limited. 26 students sent in their applications and were admitted. 19 of them completed their studies. All the students had the benefit of telephone tutoring.

The students pursued their studies at home by means of a correspondence course produced at the Department. They answered assignments for submission on six occasions and mailed them to their tutor for examination. Three or four days after the corrected assignments had been returned, the tutor called the student. Starting from the assignments for submission they discussed different problems on the telephone.

The students were invited to call their tutor during the course and the tutor called the students at regular intervals in order to stimulate and motivate them in their studies. The calls were recorded.

Totally 140 telephone calls were exchanged, i.e. an average of 7.37 calls per student. The average length of the calls was 7.81 minutes, the variation being relatively great - between 1 min. 19 sec. and 25 min. Somewhat more than half of the calls (55 per cent) were made in connection with the assignments for submission.

After having completed their studies the students reported in a questionnaire that they were positive to the telephone calls and thought that the telephone contact had been of great help to them. The fact that the telephone calls were recorded did not affect them negatively. The number of calls had no co-variation with the study results. As a whole the students participating in the experiment achieved good results. Out of the 19 who completed the study course 17 were examined within the normal period of time and 13 of those gained the higher mark, Credit. It is not possible to compare their study results with the achievements of corresponding on-campus students.

The result of the content analysis will be presented in a later section.

2 Presentation of the problems

In the preceding chapter we have tried to present correspondence education as an instructional form, to outline its place in educational society, and to describe its characteristic features involving a specific form of communication between tutor and student. The latter component – the two-way communication – is usually organized as a number of assignments for submission sent by post on certain occasions during the period of study.

In the investigation, the results of which are presented in this thesis the conventional assignments for submission have been supplemented with telephone conversation between tutor and students. The aim has been to increase the interaction in the instructional situation and thereby improve the study situation of the students.

In order to shed some light on what happens when correspondence education is supplemented with telephone tutoring we have made an experiment using experimental and control groups. This research strategy makes it possible for us to find out on one hand how students react to telephone tuition and on the other hand if and how they benefit from this additional form of two-way communication.

First we will investigate the students' reactions, which can be done by examining the study conditions of those students who have received telephone instruction. The presentation will be descriptive, but to some extent it will be possible to make numerical analyses.

The problems discussed concern how students respond to the contact with their tutors, how they experience talking to them on the telephone, and to what extent they consider that they have been helped both in their studies in general and in specific parts of the course. The first problem to be studied will be:

1. *How do students receiving telephone tutoring in connection with their assignments for submission respond to this form of instruction?*

As will be apparent in the next chapter, the investigation has utilized correspondence courses in two different subjects – Economics and French. These subjects have different characteristics, Economics being a general subject and French being a subject that trains language skills. It is reasonable to assume that the contents of the telephone calls exchanged in the two subjects are of a different nature. The calls have been recorded and subjected to content analysis. The result of the analysis will show if the contents differ as to the problems discussed and if subject-related problems occur equally often in both subjects. Thus, our second question can be framed:

2. *Do students receiving telephone tutoring in connection with their assignments for submission discuss subject-related problems to the same extent when they study a general subject as when they study a foreign language?*

The telephone calls provide a more direct contact—person-to-person—than is otherwise found in correspondence education. This may entail that the students, besides problems in connection with the study course, mention and want to discuss personal or social problems. Our investigation cannot give an unambiguous answer to the question of social isolation as experienced by correspondence students which was discussed in the previous chapter. But it is possible to find out *if* personal or social problems are discussed in the telephone calls exchanged. This raises a third question:

3. *Do students receiving telephone tutoring in connection with their assignments for submission discuss personal or social problems with their tutors during the telephone calls?*

The questions asked above can be answered by examining data from the students who received telephone calls from their tutors. As we have designed an experiment it is possible to study many different effects of the experimental variable.

In the previous chapter we discussed the lack of possibilities for students to influence the interaction between tutors and students in pure correspondence education. According to FLANDERS' (1964, 1970) theory of conditions in a classroom the indirect influence of the teacher—that is his responses to students' ideas —is the most valuable. By the introduction of telephone tutoring in correspondence education the two-way communication can be modified to make possible such an indirect influence on the interaction. Thus, the correspondence teacher can react to the students' ideas and use them in his tuition. This leads us to state some hypotheses which can be tested by means of the experimental design.

I *As regards achievements on the course of study students receiving telephone tutoring in connection with their assignments for submission differ from those who receive no telephone tutoring.*

Achievements have been measured by means of final tests especially designed for the two courses. But achievements can also be measured in terms of the time spent on studying the course. In correspondence education the period of study is principally free, the students being allowed to study the course at their own pace. Feedback attained by corrections and comments on the assignments for submission can serve as stimulation both as regards gaining knowledge and motivation. An increasing interaction between tutor and student changes this feedback, maybe mostly as regards motivation. The student may feel more stimulated and may want to work through the course faster than he would without this additional stimulation. This assumption gives rise to the following hypothesis:

II *As regards time of study to complete the course students receiving telephone tutoring in connection with their assignments for submission differ from those who receive no telephone tutoring.*

If we look at the increasing interaction as a possibility to affect the students' mo-

tivation, it is likely that the improved feedback will lead to a more positive attitude towards studying. By making good use of the students' ideas and intentions the teacher may create a condition which lessens the student's dependence on the written material and augments his achievement. This can make his attitudes towards studies more positive. At the same time the student may experience that someone is concerned about his progress. The interaction may also contribute to the student feeling less isolated when studying. These suppositions lead us to two more hypotheses:

III *As regards attitudes to studying and to the way of studying the course students receiving telephone tutoring in connection with their assignments for submission differ at the end of their studies from those who receive no telephone tutoring.*

IV *As regards experience of isolation in the course of studying students receiving telephone tutoring in connection with their assignments for submission differ from those who receive no telephone tutoring.*

In the following chapters we will try first to find answers to the questions framed and secondly to test our hypotheses. Chapter 3 gives information on the design of the investigation, the courses used, the methods of data collection, and the participating students. In Chapter 4 we present the results by means of which we can answer the questions, and in Chapter 5 the results of the testing of our hypotheses. In the final chapter we summarize the results of the investigation and discuss them on the basis of the questions raised and the hypotheses stated.

3 Procedure of investigation

3.1 Experimental design

The main purpose of this investigation is to study the effects of telephone tutoring on students who are offered this possibility when studying a conventional correspondence course. The study has an experimental design with correspondence students distributed at random over one experimental group supplied with telephone tutoring, and one control group studying conventionally by means of a correspondence course, i.e. without telephone tutoring. The randomization will be described in section 3.4.

Simplified, the experimental design can be described as in Table 3.1.

Table 3.1

E:	S + A —— Tel —— T	
C:	S + A ———————— T	
E	=	Experimental group
C	=	Control group
S + A	=	Correspondence course, i.e. study material and assignments for submission
Tel	=	Telephone tutoring
T	=	Test (final)

The design implies that the independent variable of the experiment is the occurrence of telephone tutoring. For the rest the two groups have access to the same study material and are tested by the same tests. The correspondence course, the assignments for submission included, is a course normally offered by the correspondence school—no reductions or additions were made for the purpose of experimentation. The final tests are not normally included in the study material but were designed especially for this investigation by a teacher at the school. They are, however, identical for the experimental group and the control group. The remaining instruments used for data collection in the two groups differ in certain single items—described later in section 3.3—but are mainly equivalent. They were presented to the students at the same point in the time schedule.

Thus, the independent variable—telephone tutoring—is the only manipulated variable of the experiment. The telephone tutoring was given shortly after the school had returned the examined and corrected assignments for submission. A closer presentation of the exact procedure of the telephone service will be given in sec-

tion 4.1. The procedure used provides favourable possibilities for examining casual relationships. The strict delimitation of the independent variable seems to eliminate the risk of mistaking one stimulus variable for another. Any effects that may occur in the dependent variables can be assigned to the independent variable.

Initial equivalence between the two groups should be possible to achieve by randomization. It stands to reason that they must not differ systematically in the initial position. To check the correctness of the randomization method the equality of the groups will be tested against a number of background variables. For practical reasons it has not been possible to test the students' previous knowledge of the subject. The equivalence refers to broader criteria, such as educational background.

A circumstance that might cause problems is the drop-out of students in the course of the study. It is well-known that the drop-out rate is rather high in adult education, including correspondence education. The reasons why will be commented on in section 3.5. In this context the drop-out will be discussed only as a matter of research methodology. Its size and its distribution over the experimental and the control group are of importance for the possibility of generalization.

Although there is drop-out some kind of comparison must be made between the groups. One possibility is to analyse the results of all the students enrolled regardless of whether they completed, dropped out of or even started the course. This way of proceeding is, however, impaired by faults which cannot be disregarded. One of the most essential dependent variables–the final test–is missing for those students who did not complete or fulfil the study course. This will complicate the interpretation of the results.

Another possibility is to restrict the analyses and comparisons to students with complete data. This way of proceeding is normally used when the frequency of drop-out is small. This is not the case in the present investigation. When the experiment was planned we prepared ourselves for a large drop-out rate by choosing courses with high enrolments and by having large groups of students taking part in the experiment. When analysing and comparing we use available information from drop-out students and relate these findings to what is valid for the completers and the fulfillers. For differences that may occur between these groups reservations will be made in the interpretation and generalization of the results.

3.2 Study courses

The investigation presented in this thesis was carried out in correspondence schools which were members of the European Home Study Council (EHSC). The courses used are included in the permanent program of the participating schools, and no changes were made, either in the study material or in the assignments for submission. Only the final test was especially designed to be used by the students participating in the experiment.

In choosing branches of study for the investigation we sought to attain the greatest possible breadth to be able to study the effects of telephone tutoring on different groups of subjects. Three subject areas were supposed to be of importance:

- mathematics and natural sciences
- foreign languages
- social sciences.

We presumed that supplementary instruction in the form of telephone tutoring might be accomplished in different ways depending on the different nature of the subjects taught. Mathematics and natural sciences contain items of a laboratory character. Was it possible to supplement the course material by means of auditive communication without the help of visual stimuli? Foreign languages make other demands. Could telephone tutoring be of particular value for this branch of study, e.g. in conversation exercises? Social science invites exchanging opinions. This could no doubt be facilitated by means of telephone communication.

After the choice of subject areas specific criteria were set up for the final selection of subjects and courses. The first criterion was that the course should be directed to *adult students*. This requirement was rather difficult to meet even if correspondence schools normally design their courses for adults. The selection was made according to the schools' estimate of prerequisite knowledge for the course in question. By selecting courses based on completed secondary education we tried to avoid youth students studying a course parallel to ordinary youth school education.

The second criterion required a *highly frequent course*, i.e. a course that had at least 400 enrolments a year. Thus we ensured a sufficiently large number of participants during the period of time that our investigation was going on.

A third criterion was that the course should have *a high frequency of completers*. The drop-out rate varies in different subjects. Our intention was to reduce the effects of drop-outs as far as possible.

The fourth criterion concerned the *length of the course*. The length varies from subject to subject and can be measured in different ways. Merely to count the number of pages of the study material can be misleading, as different subjects require varying degrees of verbalization. Another possible way is to count the occasions for submission. As a rule these are inserted in relation to an estimated study time. Although there are variations from school to school and from subject to subject, we preferred to use the number of submission occasions to measure the length of the course. This was practical as the telephone contact should be established in connection with the assignments for submission. The course selected should have 4-6 submission occasions.

The fifth criterion was a *high frequency of enrollers at the beginning of the autumn*. Contrary to conventional education most correspondence schools have no fixed course start, the students being admitted to a course at any time of the year. From experience it is known that most enrolments take place after the

summer holidays. To utilize this accumulation of students and thereby reach a sufficient number of participants for the experiment within a limited period of time we selected courses with a high frequency of enrollers in the early autumn.

These criteria made the selection of courses–and participating schools–limited. The following three courses were selected.

- mathematics and natural sciences: Algebra (Norway)
- foreign languages: French (England)
- social sciences: Economics (Sweden)

However, only two of the courses entered into our investigation: French and Economics. The Norwegian course in Algebra was included in a course combination for a technical examination. The investigation was planned and the data collection had started when the requirements for the examination were changed and the course was withdrawn. There was no time for a second choice of course or school. The subject area [illegible] out.

The two courses used in the [illegible]n will be described briefly in sections 3.2.1 and 3.2.2 below.

3.2.1 French

The course in French is a beginner's course for English-speaking adult students. The entire course includes 30 lessons or study units. Each lesson has a set of assignments for submission which the student can send to the school for examination.

The study material consists of four components, the assignments for submission excluded.

- Recordings (tapes or records)
- Handbook
- Illustrated book
- Written exercises

All the lessons are recorded on tapes (or records). Besides they are written down in the Illustrated book, so that the student listening to the reading or conversation on the tape can follow the text in the book. The Handbook provides for each lesson a short summary (in English and French), a vocabulary, notes and explanations. The written exercises consist of self-checked exercises lesson by lesson. The student's work with the study material follows the same pattern through all the lessons.

The assignments for submission cover both items of factual knowledge and items of practice. Their form necessitates answers in the student's own words–from completion tests to small essays.

The school giving this course in French sells its courses with an offer of correspondence instruction. In order to complete the course it is not necessary to return the assignments for submission. On buying the course the student receives

the entire study material once and for all. In the present investigation only those students participate who made use of the offer of sending in their assignments for submission.

3.2.2 Economics

The course in Economics is a basic course intended for adult students. It contains 23 chapters in a textbook, divided into 5 study units. Each study unit has an occasion for submission of assignments that the student is supposed to send to the school for examination.

The study material consists of three components, the assignments for submission excluded.

- Textbook
- Study guide
- Diagnostic tests

The study schedule is as follows. The student reads the chapters included in the study unit. In the text exercises are integrated, which are commented on in the study guide. This also contains instructions for supplementary reading, and definitions of words and expressions not explained in the textbook. After having completed a study unit, the student takes a diagnostic test and then he answers the assignments for submission.

The assignments for the first four submissions are designed as multiple-choice items. These are corrected and commented on by a computer. On the last occasion for submission the assignments are of the essay type and they are examined and commented on manually by a tutor.

3.3 Methods and instruments for data collection

This section describes the collection of data, the instruments used and the time schedule of the experiment. The latter was to a certain degree determined by the instructional form chosen. Below we will first present the various instruments used for the collection of data. Secondly the time schedule will be presented and with it the timing of questionnaires, tests and telephone calls. Besides, some results giving background information will be discussed.

3.3.1 Instruments for data collection

The following instruments were used to collect data for our study:

- Regular register of the school
- Enrolment questionnaire
- Final tests
- Post-questionnaire
- Drop-out questionnaire
- Non-answer questionnaire
- Telephone calls

Naturally we used the information that the course itself normally gives. *The results of the assignments for admission* were entered to enable us to study changes in achievement during the study period. In the Swedish school the marks of the assignments are already normalized according to a scale with five grades. For the English school we normalized the actual number of scores on each submission occasion in the same way, *i.e.* into a five-point scale. Another kind of information easily obtainable is the *study time*. Each student's time was calculated in terms of weeks from the date of application until the fifth set of assignments for submission was received by the school.

The remaining data-collecting instruments were designed especially for the research project. As the students began their studies *an enrolment questionnaire* was sent to them. This questionnaire supplied us with background information and told us about the students' motives for studying. The items of background information collected by the enrolment questionnaire are given in Table 3.2 (see p 41).

One of the items requires an explanation. In item e), occupation, we have used categories unique for this study. We did not want to use social classes, as they covariate to a great extent with educational background (see e.g. FLINCK, 1977). As our investigation concerns correspondence education supplemented with telephone tutoring we wanted to find out how the choice and the result of this instruction was influenced by the functions dominating a person's daily work. It is reasonable to assume that persons who work primarily with written symbols—e.g. managers, clerks, secretaries—would be more apt to take instruction from written material than others. A second group consisting of those who work with the spoken word—e.g. teachers, shop-assistants—might prefer to be instructed by telephone. A third group has occupational functions which are mainly manual—e.g. mechanics, farmers. People with unclassifiable functions—e.g. students, retired persons—were placed in a fourth group.

This classification is, of course, very vague but it gives us an opportunity to relate occupation to instructional form. It is possible that the occupational functions of a person—in the terms we have used here—co-variate with achievement.

In the enrolment questionnaire information was also collected about the students' motives for studying. The same enrolment questionnaire was used in all three experimental series of the research project (cp section 1.1) and the findings have been presented in a separate report (BÅATH, FLINCK & WÄNGDAHL, 1979b). Of special interest are the questions concerning the students' motives for studying. Motivational issues are treated in two previous reports from the project (FLINCK, 1977, WÄNGDAHL, 1978). Adults' motives for participating in adult education in general have been studied by among others HOY (1933), HOULE (1961), SHEFFIELD (1964), BOSHIER (1971, 1972, 1973), BURGESS (1971), MORSTAIN & SMART (1974). The reasons why adults prefer correspondence education are dealt with by WEDELL & PERRATON (1968) and GLATTER & WEDELL (1971).

Table 3.1 Background variables

Variable	Content	
a) sex	male or female	
b) age	division into five groups:	< 20 years 21-30 years 31-40 years 41-50 years > 50 years
c) marital status	division into four groups:	single married widowed divorced
d) study situation	division into four groups: study full time study, and work part-time away from home study, and work full-time away from home study and work at home	
e) occupation	division into four groups depending on which function dominates the student's professional work (eg comments in the text): written symbols the spoken word manual work other functions	
f) educational level	*Swedish* elementary school comprehensive school upper secondary school university	*English* no school examinations C.S.E., G.C.E. O-level G.C.E. A-level university

C.S.E. = Certificate of Secondary Education
G.C.E. = General Certificate of Education
O-level = ordinary level
A-level = advanced level

In our enrolment questionnaire we introduced a number of statements concerning reasons for studying and asked our students to consider the importance of each reason to them personally. The answers were factor analysed and three factors emerged. As to the factor loadings of the items we refer to the report previously mentioned (MARTIN, FLINCK & WENGSTRÖM, 1978).

The first factor (factor I) seems to have a manifest social content. Statements falling out to this factor were:

I want to be more accepted by others
I want to make new friends by means of participating in the course
I think everyone around me is studying
I want to escape from personal problems
I want to get away from the daily routine
I want to share a common interest with a relative or close friend
I want to know as much as other people do.

According to the students these reasons were of slight importance to them.

The second factor (factor II) contains statements which seem to have a manifest goal-oriented content. Goals included point at situations outside the study situation.

I want to get on in my career
I want to gain a better competence for my job
I want to prepare myself for other studies
I require the course as a help for other studies.

The students' responses to these statements are more evenly distributed than to factor I.

The third factor (factor III) includes statements which show a general interest in knowledge and in studying. No manifest goal is expressed, the statements having a more general import.

I want to know more
I want to learn something new
I am interested in the subject
I enjoy studying
I want to seek knowledge for its own sake.

As in factor II the students' responses are evenly distributed.

The three factors obtained correspond quite well to previous findings concerning adults' participation in conventional classroom education. All but one of the six lines mentioned above (see page 40) fall back on BERELSON's (1961) analysis of the main why adults study. He mentions three kinds of orientation: goal-oriented learners, activity-oriented learners, and learning-oriented learners. In our analysis it is possible to identify BERELSON's first and third group: goal-orientation corresponds to our factor II, and learning-orientation to our factor III. What BERELSON names activity-orientation might correspond to our factor I. They are not identical but similar. BERELSON describes the activity-oriented learners as

> ... those who take part because they find in the circumstances of the learning a meaning which has no necessary connection, and often no connection at all, with the content or the announced purposes of the activity. (BERELSON, 1961, pp 115-16)

[illegible]

[illegible]

[illegible]

was given to those students who enrolled for the course, were supplied with course material and the enrolment questionnaire but did not send in any assignments for submission nor returned the enrolment questionnaire. The non-answer questionnaire was anonymous and asked for the reasons why the student had not started his studies or answered the enrolment questionnaire. Only five non-answer questionnaires were returned. They were not subjected to analysis.

A most important instrument for data collection were the *telephone calls* which were recorded and exposed to a thorough content analysis. They will be described in the next chapter.

3.3.2 Data collection

The instructional form used provided a natural starting-point for decisions about the procedures and timing of the data collection. The course material is divided into study units or lessons which end with assignments for submission. As all communication normally occurs by post we used postal questionnaires.

Table 3.3 Time schedule for data collection

1.	Application for the course
2.	Distribution of information, study material and enrolment questionnaire
3.	Enrolment questionnaire returned to school
4.	Submission occasion 1
5.	Telephone call 1
6.	Submission occasion 2
7.	Telephone call 2
8.	Submission occasion 3
9.	Telephone call 3
10.	Submission occasion 4
11.	Telephone call 4
12.	Submission occasion 5
13.	Telephone call 5
14.	Distribution of final test and post questionnaire
15.	Final test and post questionnaire returned to school

Schematically the time schedule can be described as in Table 3.3 above, which shows the average procedure for all the students. One divergency from this pattern applies to the English students. As mentioned before the course from the English school can be studied without the help of assignments for submission. There are simply facilities available. When the course material is distributed to a student the first set of assignments for submission is enclosed and only students who answer and return the assignments are registered as correspondence students. Consequently, the enrolment questionnaire and our information about the research were not sent to the English students until they had returned their first assignments for submission (after point 4 in Table 3.3 above).

The total time during which the data collection took place was 1 year 10 months for the Swedish school and 1 year 9 months for the English school. At the Swe-

dish school the registration of participants in the experiment started on the 1st of August, 1975 and continued for 8 months. By this time the necessary number of students was reached. The data collection was discontinued on the 1st of June, 1977.

At the English school students participating in the experiment were registred from the 1st of October, 1974. After 5 months the number of students was sufficient. At this school the data collection continued until the 1st of July, 1976.

3.4 The participants

As mentioned before (p 38) the students participating in this study were selected from two schools with courses fulfilling certain criteria, such as a high frequency and a great number of enrollers in the autumn. On an average the selected courses have 400-600 applicants a year. Our intention was to limit the admission to as concentrated a period of time as possible, preferably to six months starting after the summer holidays. Theoretically we should then have had half the estimated number of students enrolling during a year. That led to the conclusion that 200 students from each school was a convenient number of participants.

As to the distribution of students into one experimental group and one control group, an equal number in each group could seem reasonable. The number of students in the experimental group was increased, however, since we intended to use the telephone as an instructional aid in this group and did not know if all the students had access to a telephone. The ratio was 60-40, which means that 60 per cent of the registered students would belong to the experimental group and 40 per cent to the control group.

For various administrative reasons the randomization could not be carried out in the same way at the two schools. At the Swedish school all students are given an eight-digit registration number. A student who has previously taken a course at the school, keeps the registration number from his first enrolment when he takes a new course. The registration of new students takes place currently in all courses as the applications are received. Consequently, students selected for our investigation do not have consecutive registration numbers. The students were assigned to either group at random, by means of their registration numbers. Those with registration numbers ending with 00-60 belong to the experimental group, those with numbers ending with 61-99 to the control group.

At the English school we could not apply the same randomization system, as no registration numbers were used there. After the registration had started the first three enrollers were assigned to the experimental group, the next two to the control group, the following three to the experimental group, and so on.

Under the prerequisites given above—a minimum of 200 students per course, continuous enrolment, assignment at random with 60 per cent in the experimental group and 40 per cent in the control group—the participants were distributed as shown in Table 3.4.

Table 3.4 Participants

	Participants		Answered enrolment questionnaires		Primary drop-outs	
	n	%	n	%	n	%
Sw. Exp.	143	59.1	129	90.2	14	9.8
Sw. Contr.	99	40.9	94	94.9	5	5.1
Σ Sw.	242	100.0	223	92.1	19	7.9
Engl. Exp.	120	60.0	111	92.5	9	7.5
Engl. Contr.	80	40.0	71	88.8	9	11.2
Σ Engl.	200	100.0	182	91.0	18	9.0

The same table reports the number of returned and answered enrolment questionnaires. These questionnaires are essential as they supply almost all the background information about the students.

As the English school had no registration numbers to consider when randomizing, they could register exactly the requested number of students in each group. At the Swedish school both the registration numbers and the ratio 60-40 had to be taken into account at the randomization. That explains the somewhat larger number of participants in the Swedish groups.

Later the drop-outs will be discussed more thoroughly but there is one group of primary drop-outs which has to be accounted for in this section. Since much of the analysis that follows is based on background information collected by means of the enrolment questionnaire, participants who did not answer this questionnaire were excluded from the investigation. Most of them discontinued their studies at an early stage, too. Two other students were excluded for separate reasons, a Swedish experimental student because of impaired hearing and an English experimental student as he was only 13 years old, i.e. not adult. To get some notion of the primary drop-outs we collected the information that could be obtained about them from the regular registers of the schools. Table 3.5 shows their sex distribution and how far they had progressed before giving up the course.

Table 3.5 Data on primary drop-outs

	Sex		Completed submission occasions						
	m	f	0	1	2	3	4	5	n
Sw. Exp.	11	3	11	2		1			14
Sw. Contr.	2	3	3	2					5
Engl. Exp.	6	3		5	2			2	9
Engl. Contr.	7	2		5			2	2	9

All but two students specially mentioned above received at least two reminders about the enrolment questionnaires. Together with the last reminder they also got a new form. The seven students who are considered to be drop-outs although

they completed 3-5 assignments for submission—one Swedish and six English students—explained in letters that on principle they never answered questionnaires or took part in scientific experiments. The remaining students did not react to the reminders sent to them.

As shown in table 3.5 there is an over-representation of men in the group of primary drop-outs. How this affects the distribution of male and female in the experimental and the control groups will be discussed later.

All the students who answered the enrolment questionnaire are regarded as participants in the experiment reported in this thesis. Students called primary drop-outs are excluded from further analyses.

The following description of the students participating in the experiment is based on the background information gained from the enrolment questionnaire. Simultaneously we present an analysis of the randomization in relation to the background variables. For this analysis we have chosen the chi-square test and the statistical significance level of $p = .10$. That means that if $p < .10$ there is a statistically significant difference between the experimental group and the control group in the distribution of a certain background variable, and if $p > .10$ it cannot be proved that the distributions differ. The various background variables are listed in Table 3.2 (p 41).

Table 3.6 Sex distribution

	Male	%	Female	%	Σ	
Sw. Exp.	89	69.0	40	31.0	129	$\chi^2 = .00$
Sw. Contr.	64	68.1	30	31.9	94	df = 1
Σ Sw.	153	68.6	70	31.4	223	$p > .99$
Engl. Exp	70	63.1	41	36.9	111	$\chi^2 = 5.30$
Engl. Contr.	57	80.3	14	19.7	71	df = 1
Σ Engl.	127	69.8	55	30.1	182	$.01 < p < .05$

In the Swedish group as a whole 68.6 per cent are men and 31.4 per cent women. Consequently there is a majority of men studying the course in Economics. The ratio male-female is, however, similar in both the experimental and the control group. The entire English group taking a course in French also has an overrepresentation of men—69.8 per cent compared to 30.2 per cent women—but the same holds true only for the control group whereas the experimental group has a greater share of women and less men than expected. This deviation from the expected distribution indicates a statistically significant difference in the sex distribution between the experimental group and the control group. An inclusion of the primary drop-outs in the analysis does not eliminate this difference. We have to admit that as regards the sex distribution of experimental and control students in the English sample the randomization has not been sufficiently satisfying. This condition may affect the possibilities to draw conclusions as to this background variable.

Table 3.7 Age distribution

	Age						
	⩽ 20	21-30	31-40	41-50	> 50	Σ	
Sw. Exp.	18	52	33	18	8	129	$\chi^2 = 3.78$
Sw. Contr.	13	43	28	7	3	94	df = 4
Σ Sw.	31	95	61	25	11	223	p > .30
Engl. Exp.	4	27	31	23	23	108	$\chi^2 = 1.47$
Engl. Contr.	2	14	18	17	19	70	df = 4
Σ Engl.	6	41	49	40	42	178	p > .80

The Swedish participants are younger than the English ones. The medians of the two groups fall into the interval 21-30 years for the Swedes, and into the interval 31-40 years for the English students. A great share of the latter are older than 50 years (23.6 per cent) while the corresponding share is considerably less for the Swedes (4.9 per cent). The obvious difference between the Swedish group and the English one probably depends more on the subject of the course than on the nationality. In the English group there are 4 drop-outs who have not given their age, 3 students belonging to the experimental group, 1 to the control group. These drop-out students do not affect the distributions. As concerns the age distribution there are no statistically significant differences between the experimental group and the control group either in the Swedish or in the English sample (cp Table 3.7).

Table 3.8 Marital status

	Status				
	single	married	widowed	divorced	Σ
Sw. Exp.	52	67	0	10	129
Sw. Contr.	46	42	3	3	94
Σ Sw.	98	109	3	13	223
Engl. Exp.	40	68	2	1	111
Engl. Contr.	20	45	3	3	71
Σ Engl.	60	113	5	4	182

The distribution of married and unmarried students is relatively even among the Swedes and it cannot be proved that the distributions of the experimental group and the control group differ significantly ($\chi^2 = 1.18$, df = 1, p > .20). In the chi-square analysis the categories single, widowed and divorced persons were combined into one category.

In the English sample a larger number of the participants state that they are married. As regards the distribution of married and unmarried (single, widowed and divorced) students we cannot prove any difference between the experimental group and the control group ($\chi^2 = .10$, df = 1, p > .70). In the analyses and interpretations that follow, the categories Married and Unmarried (the latter including single, widowed and divorced persons) will be used.

Table 3.9 Study situation

	Study situation				
	1	2	3	4	Σ
Sw. Exp.	2	6	113	8	129
Sw. Contr.	0	3	88	3	94
Σ Sw.	2	9	201	11	223
Engl. Exp.	1	8	85	17	111
Engl. Contr.	1	4	56	10	71
Σ Engl.	2	12	141	27	182

Study situations
1 = study full time
2 = study, and work part-time away from home
3 = study, and work full-time away from home
4 = study, and work at home

The great majority of all the Swedish and English participants study and work full-time away from home–90.1 per cent of the Swedish sample and 77.5 per cent of the English one. This difference is in itself interesting. It might go back to the age distribution, the English sample holding a larger number of older students. We have–which will be discussed later–a larger number of retired persons in the English sample than in the Swedish one. In fact none of the Swedes declared himself retired. These conditions may explain the differences as to study and working situation.

As appears from Table 3.9 the categories 1 (study full time) and 2 (study and work part-time away from home) show low frequencies. In the later analyses they will be combined with category 4 (study and work at home), forming a new category "Not working full-time" which will be compared with the category "Working full-time" (present category 3).

If we test the distributions of the experimental and the control groups we cannot prove that they differ significantly either in the Swedish sample ($\chi^2 = 1.88$, df = = 1, $p > .10$) or in the English one ($\chi^2 = .13$, df = 1, $p > .70$).

Testing the distribution of occupational categories in the Swedish and the English samples we can prove that there is a statistically significant difference between them ($\chi^2 = 11.70$, df = 3, $.01 < p < .05$). This difference is probably due to the over-representation of category 2 (the spoken word) among the Swedes, whereas category 4 (other functions) is over-represented among the English students. The latter phenomenon may be due to the fact that retired persons are classified in this category–as mentioned before only English students, and not a few of them, were retired. Why category 2–persons who in their occupational functions work mainly with the spoken word–should be more frequent in the Swedish group can hardly be explained. The nature of the subject–Economics–does not favour these circumstances. If anything the subject chosen by the English group–French–should

attract more persons with such an occupational background. It is not unreasonable to assume that people prefer studying a subject where they could make use of knowledge gained in their professional work. However, that was not the case in this study.

If we test the distributions of the experimental group and the control group within each national sample we cannot prove that they differ significantly (cp Table 3.10).

Table 3.10 Occupational categories

	Category					
	1	2	3	4	Σ	
Sw. Exp.	37	54	27	8	126	$\chi^2 = .56$
Sw. Contr.	27	37	24	6	94	df = 3
Σ Sw.	64	91	51	14	220	$p > .90$
Engl. Exp.	33	32	29	17	111	$\chi^2 = .71$
Engl. Contr.	25	20	17	9	71	df = 3
Σ Engl.	58	52	46	26	182	$p > 70$

Category 1: written symbols
2: the spoken word
3: manual work
4: other functions
(cp the discussion on p 40)

Table 3.11 Educational level

	Level					
	1	2	3	4	Σ	
Sw. Exp.	34	33	55	7	129	$\chi^2 = 4.60$
Sw. Contr.	14	31	43	6	94	df = 3
Σ Sw.	48	64	98	13	223	$p > .20$
Engl. Exp.	36	28	21	26	111	$\chi^2 = 2.89$
Engl. Contr.	20	26	10	15	71	df = 3
Σ Engl.	56	54	31	41	182	$p > .30$

Educational level 1: Sw.–elementary school
Engl.–no school examinations
2: Sw.–comprehensive school
Engl.–CSE, GCE O-level
3: Sw.–upper secondary school
Engl.–GCE A-level
4: University

As concerns educational level we cannot prove any significant differences in the distributions of the experimental and the control groups either in the Swedish sample or in the English one. The classification of educational background into the levels used is open to discussion. The intention was to make a division into three groups: primary, secondary and tertiary education. Primary education corresponds to level 2 above, secondary education to level 3, and tertiary education to level 4. Level 1 was separated and not combined with level 2 to mark an older and

shorter primary education. It would not be meaningful to discuss the distribution of educational levels between the national groups. This variable will only be used for internal comparison with other variables in the future analysis.

The information about the students provided above represents fundamental background data which will be used later in the analysis. All of these data were collected by means of the enrolment questionnaire. On the same occasion the students were asked if they had participated in a correspondence course before. It is reasonable to assume that this condition might influence their work with the current study course.

Table 3.12 Previous correspondence study

	Previously taken a correspondence course			
	Yes	No	Σ	
Sw. Exp.	63	66	129	$\chi^2 = .10$
Sw. Contr.	43	51	94	df = 1
Σ Sw.	106	117	223	$p > .70$
Engl. Exp.	25	86	111	$\chi^2 = .07$
Engl. Contr.	18	53	71	df = 1
Σ Engl.	43	139	182	$p > .70$

In this respect there is a statistically significant difference between the Swedish and the English samples ($\chi^2 = 24.72$, df = 1, $p < .001$). In the Swedish sample equal shares answered Yes and No, whereas a majority of the English students had not previously studied by correspondence (76.4 per cent).

When testing the distributions of the experimental group and the control group within each national sample we cannot prove that the groups are significantly different. This means that the experimental and the control students are equal as regards experience of correspondence studies.

The students were also asked if they were taking another course by correspondence at the same time as they studied the course involved in the experiment.

Table 3.13 Parallel correspondence studies

	Taking another correspondence course simultaneously			
	Yes	No	Σ	
Sw. Exp.	28	101	129	$\chi^2 = .25$
Sw. Contr.	17	77	94	df = 1
Σ Sw.	45	178	223	$p > .50$
Engl. Exp.	7	104	111	$\chi^2 = .07$
Engl. Contr.	3	68	71	df = 1
Σ Engl.	10	172	182	$p > .70$

As regards parallel studies there is also a statistically significant difference between the Swedish sample and the English one ($\chi^2 = 19.10$, df = 1, $p < .001$). Only 5.5 per cent of the English students were taking an additional course by correspondence whereas 20.2 per cent of the Swedes were engaged in parallel correspondence studies. We cannot, however, prove that the experimental group differs from the control group in this respect in any of the two national samples.

To sum up we can state that the randomization used to divide the participants into experimental group and control group was rather satisfactory (cp Table 3.14).

Table 3.14 Summing up the randomization

Variable	Samples and groups	
Sex	Sw. = Engl.	
	exp. = contr.	exp. ≠ contr.
Age	Sw. ≠ Engl.	
	exp. = contr.	exp. = contr.
Marital status	Sw. = Engl.	
	exp. = contr.	exp. = contr.
Study situation	Sw. = Engl.	
	exp. = contr.	exp. = contr.
Occupation	Sw. ≠ Engl.	
	exp. = contr.	exp. = contr.
Educational level	Sw. = Engl.	
	exp. = contr.	exp. = contr.
Previous correspondence study	Sw. ≠ Engl.	
	exp. = contr.	exp. = contr.
Parallel studies	Sw. ≠ Engl.	
	exp. = contr.	exp. = contr.

In all cases but one we cannot prove that the experimental group and the control group within each of the two national samples differ statistically in relation to a number of background variables. The only case in which a statistically significant difference can be proved is the sex distribution of the English students. It means that no possible differences—except for the sex variable in the English sample—in the future analyses comparing experimental and control group within a national sample can be assigned to differences between the groups as regards background variables. Comparisons between the Swedish and the English samples will not be made.

3.5 Drop-outs

In previous sections the problem of drop-outs has been touched upon. We mentioned that the drop-out rate is great both in adult education in general and in correspondence education. It has been discussed in many different contexts why this is so. The explanation is probably very simple – the voluntary nature of both application and participation. If this is the true explanation and if there is such a great drop-out rate this should be a reminder to all organizers of adult education. But is the great drop-out real or only apparent? And can we perhaps find that the real cause of the registered drop-out is a study situation which does not meet the interests, needs, and qualifications of adults?

Drop-out has been investigated in many studies concerning both adult education and correspondence education (see e.g. JAMES & WEDEMEYER, 1959; HOULE, 1964; VERNER & DAVIS, 1964; ZAHN, 1964; KNOX & SJOGREN, 1965; BROWN, KNOX & GROTELUESCHEN, 1966; DICKINSON & VERNER, 1967), and all the researchers conclude that the drop-out rate is high. They also try to find causal connections but the general findings are that the causes are multiple and complex.

REKKEDAL (1972) has shed some light on the problem in a study in Norway planned on a large scale and concerned with correspondence education. His results show that the frequency of drop-out varies between 30 and 80 per cent depending on how drop-out is defined. The same percentages apply to adult education in general. He also found that the tendency to drop out is greater at the beginning of the studies. In an attempt to sum up the reasons for a student dropping out REKKEDAL declares:

> Many of the reasons given for discontinuance in different survey studies indicate that even if the educational institutions were perfect, a considerable number of students would drop out because of problems to which the school can give no solutions. Some students reach their goals before the course or sequence is completed and see no need to continue. Some have too low basic academic aptitudes, while others encounter problems in their private lives which prevent continued attendance. (REKKEDAL, 1972, p 13)

In our study the drop-out is a reality which cannot be disregarded. It will influence the analytical work to a high degree.

Principally four sub-groups of students are included in our investigation: completers, fulfillers, and two groups of drop-outs. Students previously reported as primary drop-outs (cp p 46) will not be treated any further.

Completers are those students who completed the course as far as the correspondence school required, i.e. they sent in five sets of assignments for submission. *Fulfillers* are those students who fulfilled the course as far as required for experimental purposes, i.e. they answered the enrolment questionnaire, sent in five sets of assignments for submission, – being experimental students – participated in the telephone tutoring, answered the post-questionnaire (or in one case a drop-out questionnaire), and took the final test. *Drop-outs 1* are those students who

answered the enrolment questionnaire, answered the drop-out questionnaire, but did not send in 5 sets of assignments for submission. Being experimental students they have participated in the telephone tutoring to a corresponding degree. *Drop-outs 2* are those students who answered the enrolment questionnaire but answered neither a post-questionnaire nor a drop-out questionnaire, and did not send in 5 sets of assignments for submission.

Among the drop-outs–both in type 1 and in type 2–there are in the Swedish sample students who are non-starters, i.e. they have not sent in any assignments for submission. Due to the registration system of the English school the English students were not registered as participants in the experiment until they had returned the first set of assignments for submission (cp p 44). Consequently there are no non-starters in the English sample.

In the defined sub-groups there can be a loss of information depending on left-out items in one of the questionnaires–the post-questionnaire and the drop-out questionnaire. Lost information in the telephone conversations will be discussed later. But to give an idea of the effects of more vital loss of information, we have tabulated the information gained from the different instruments of data collection in Table 3.15.

Table 3.15 Distribution of participants on answered questionnaires, returned assignments for submission, final tests, and subgroups

Available data	Swedish group Exp. n	%	Contr. n	%	English group Exp. n	%	Contr. n	%	Sub-group
E+5+P+T	43	33.3	31	33.0	65	58.6	34	47.9	C P
E+5+P	1	.8	1	1.1			2	2.8	C
E+5+DO+T					1	.9			C P
E+5+DO					1	.9			C
E+4+DO	5	3.9			1	.9	5	7.0	D1
E+3+DO	13	10.1	4	4.3	5	4.5	6	8.5	D1
E+2+DO	11	8.5	7	7.4	6	5.4	5	7.0	D1
E+1+DO	2	1.6	4	4.3	4	3.6	7	9.9	D1
E+0+DO	16	12.4	15	16.0					D1
E+5	1	.8	1	1.1					C D2
E+4	4	3.1	1	1.1	8	7.2	3	4.2	D2
E+3	6	4.7	4	4.3	7	6.3	1	1.4	D2
E+2	5	3.9	4	4.3	8	7.2	2	2.8	D2
E+1	3	2.3	2	2.1	5	4.5	6	8.5	D2
E+0	19	14.7	20	21.0					D2
	129	100.1	94	100.0	111	100.0	71	100.0	

Available data:
E: Enrolment questionnaire
0-5: Number of submission occasions
T: Final test
P: Post-questionnaire
DO Drop-out questionnaire

Subgroups:
C = Completers
P = Fulfillers
D1 = Drop-outs 1
D2 = Drop-outs 2

Depending on the amount of information available in the descriptions and analyses that follow, the drop-out problem will be mentioned again in connection with the discussion of the results of the investigation. It might be valuable, however, to make some general comments on the drop-out even now and to describe its magnitude so far as we know them.

The information from Table 3.15 can be summarized in the four sub-groups as in Table 3.16.

Table 3.16 The participating students divided into sub-groups

Sub-group	Swedish sample				English sample			
	Exp. group		Contr. group		Exp. group		Contr. group	
	n	%	n	%	n	%	n	%
Completers	45	34.9	33	35.1	67	60.4	36	50.7
Fulfillers	43	33.3	31	33.0	44	39.6	34	47.9
Drop-outs 1	48	37.2	31	33.0	17	15.3	23	32.2
Drop-outs 2	38	29.5	32	34.0	28	25.2	12	16.9
	129	100.0	94	100.0	111	100.0	71	100.0

As seen from Table 3.16 the drop-out rate is high and this will of course affect the possibility to generalize from the results appearing later on. The fulfillers and the drop-outs 1 and 2 make up the entire sample. The completers are used as a separate group to estimate the study time, as this is considered to end when the student sends in his fifth set of assignments for submission.

There is, however, certain useful information to be collected from those who are classified as drop-outs 1. As, in certain respects, the drop-out questionnaire contains the same items as the post-questionnaire, this information can be utilized wherever applicable. Therefore, it will be necessary to describe how the students are distributed over the questionnaires answered.

Table 3.17 The participating students distributed over questionnaires answered (excl. enrolment questionnaire)

Questionnaire	Swedish sample				English sample			
	Exp. group		Contr. group		Exp. group		Contr. group	
	n	%	n	%	n	%	n	%
Post-questionnaire	44	34.1	32	34.0	61	54.6	36	50.7
Drop-out questionnaire	47	36.4	30	32.0	18	16.2	23	32.4
No questionnaire	38	29.5	32	34.0	28	25.2	12	16.9
Σ	129	100.0	94	100.0	111	100.0	71	100.0

In some cases the effect of drop-out can be reduced by information available in the drop-out questionnaire. But still the drop-out rate is high, since one of the most essential dependent variables - the achievement estimated by the final test - is one of the criteria used to classify a student as a fulfiller.

We have also studied the drop-outs in relation to the background variables. It can in no case be proved that the drop-out groups statistically differ from the non-drop fulfillers in any of the background variables. There is no reason to assume that the drop-out, despite its size, is systematic.

The drop-out questionnaire concerned the students' plans how far they had proceeded in the course and their attitudes to certain questions about their studies and their study situation. In Tables 3.19-3.20 the students are divided in different groups - national groups and groups of experimentation. It is reasonable to make this division because all the students who answered the drop-out questionnaire ran these questions. However, as the answers to later tests are dependent on how a student answered the first tests, the number of answers to certain questions can in some cases be small but a division into sub-groups appears to be rather meaning less.

We will first examine the students' answers to the question if they are still studying.

Table 3.19 Question: Are you at the present time still studying your course? (Drop-out questionnaire)

Alternative	Swedish sample Exp.	Contr.	%	English sample Exp.	Contr.	%	Total %
1. Still studying	11	4	16	1	3	5	11.0
2. Completed the whole course	8	5	6	8	8	8	8
3. Stopped temporarily, resume later	19	18	37	14	17	33	35.5
4. Stopped without completing, do not expect to resume	3	1	3	1	0	1	3.0
5. Not started, but intend to	13	5	18	6	4	9	19.0
6. Not started, do not intend to	1	0	1	0	0	0	.5
%	67	33	77	18	33	51	100.0

A majority (55.3 per cent) of the students who have answered the drop-out questionnaire report that they have stopped temporarily but intend to resume their studies later. This share is greater in the English sample than in the Swedish one (66 per cent against 33). We can also note that only 4.3 per cent of the students

[illegible] [illegible] [illegible] [

Most of them have made little advance in their studies. More than 70 per cent declare that they have worked through from about nothing to about one fourth of the entire course material.

It is natural to ask what has contributed to this slow progress. The drop-out questionnaire contains a number of statements as to conceivable problems causing the students to go no further in the course. The distribution of the answers to these statements is to be found in Table 3.21 in the Appendix.

The answers given are very unanimous. The students did not find it hard to start their studies (78.2 per cent), they did not find the course material difficult to understand (64.9 per cent), they did not find the course material dull (72 per cent), and they did not find it hard to work out the answers to the assignments for submission (78.5 per cent). All these statements concern the instructional material and that seemed to be no barrier.

Obviously other conditions come into play. The students report that other work hindered them (86.1 per cent) and that it was hard to study when they felt that they had not enough time (71.3 per cent). Thus, external conditions contributed to the breaks in their studies. Some students accepted the offer to state other contributory reasons. The reasons given can be grouped mainly in two fields: family circumstances (e.g. illness, taking care of infants) and working conditions (e.g. change of work, increasing amount of work).

Other statements concern different aspects of the instructional form. The students' answers (given in Table 3.22 in the Appendix) show a more or less indefinite opinion. In one case only there is a more definite standpoint. 66 per cent of the students agree to the statement that the course should have given them an opportunity to meet a tutor sometimes to get oral instruction. This standpoint, however, could not possibly have a causal connection with the fact that a student has – permanently or occasionally – interrupted his studies.

To sum up we must establish the fact that in this investigation there is a high drop-out rate which will influence the conclusions we are able to draw. The drop-out is greater in the Swedish sample than in the English one. Consequently, when the two national groups are separated in descriptions and analyses it is possible to generalize to a greater extent from the English sample.

4 Telephone tutoring

The primary aim of the investigation reported in this thesis is to study the effects of combining traditional two-way communication in correspondence education with telephone tutoring. The intention of this chapter is to describe how the telephone tutoring was arranged, to present the content analysis of the telephone calls, and to present some results of this telephone tutoring to give a basis for later discussion of the answers to the questions raised in Chapter 2.

4.1 Method

In the light of the discussions reported in the previous chapters we can state that as an instructional form correspondence education has great didactic advantages. There are, however, disadvantages in the pure form of correspondence education with respect to situational conditions, particularly as regards individual interaction. The student works by means of written study material of which the teacher is a part. The student's contact with a tutor takes place with the help of written communication primarily in the form of assignments for submission. The student gives a written answer and the tutor gives instruction—corrections and comments—in written form. The oral communication normally occurring in a classroom and essential for interaction is non-existent in pure correspondence education.

We have reported studies revealing that it is possible to increase the achievements of a student if he is permitted to interact with his teacher, above all indirectly in the sense that the teacher accepts and uses his initiatives and ideas, praises and encourages him, and asks questions. Although these investigations concern conditions in a classroom situation they are probably valid in correspondence education, too. The oral communication arranged as telephone calls between tutor and student is intended to improve the student-teacher interaction. Previous experiments in which students have been invited to get in touch with a tutor by telephon have indicated that students very seldom do so. The reasons why have not been analyzed but probably the anonymity of the tutors plays a certain part. The student does not know the tutor and finds it difficult to talk to him. He may hesitate and ask himself how the tutor will apprehend his question. Can the question be considered important enough for a telephone call? Does it expose a lack of knowledge which should not be revealed? These and other questions may deter a presumptive user of the telephone from calling his tutor.

In our study we therefore decided that the telephone calls should be initiated by the tutor. If the tutor called it might be less embarrassing to ask for support and assistance. We also wanted the telephone calls to be a natural part of the study work. For that reason they were made in connection with the assignments for

submission. We feared that calls made at regular intervals might spoil the individual working pace and thus timed them on an individual basis. Moreover, the corrected and returned assignments for submission could also provide the tutor with an obvious starting-point for a telephone call.

On receiving their course material the students constituting the experimental groups were informed that they were participating in an educational experiment and that they would be called on the telephone by their tutor every time they had had their examined assignments for submission returned from the school. They were also told that the telephone calls exchanged were to be recorded and analyzed later by the research staff. The students constituting the control groups got similar information but they were told nothing about the telephone calls.

The practical administration of the telephone tutoring was as follows. When a student had answered a set of assignments for submission, he mailed them to the school. After the tutor had examined and commented on them they were returned to the student. As the correcting tutor and the telephone tutor were not the same person the examined assignments were copied before the return and the copy was handed over to the telephone tutor. At the Swedish school the first four sets of assignments were corrected and commented on by a computer, while the fifth set was handled manually. At the English school all assignments were corrected and commented on by a tutor. About one week after the return of the assignments, the tutor called the student.

According to the instructions given to the telephone tutors there should in principle be no restrictions as to the content or duration of the telephone calls. The only exception was that the tutors were not allowed to give help of a kind that enabled the students to answer future assignments without consulting the study material. The starting-point of the calls should be the latest set of assignments and the achievement attained by the student. Mistakes should be commented on and the tutor should make sure that the comments given had been understood correctly. The student should be encouraged to raise various problems himself. The tutors were also informed that the students might want to discuss personal problems. If that happened the conversation should carry on as before without being considerably abridged or extended.

4.2 Content analysis of the telephone calls

One task of this investigation is to study the topics treated by tutor and students during the telephone calls exchanged in connection with the assignments for submission. We have previously assumed that various problems can be discussed in this direct contact (cp p 33)–strictly subject-related problems, general problems concerning study technique, practical problems of the administration and organisation of the study work, and more personal or social problems, e.g. those connected with a correspondence student's surmised feelings of social isolation (cp p 23).

By making a content analysis of the recorded calls it is possible to find out what is discussed on the telephone. Content analysis can be carried out in a number of

ways. In a previous report from our project (FLINCK, 1976b) we analyzed in detail various views on content analysis as a research technique. Several models have been used but all have the same fundamental purpose–to give a systematic description of the content in a communicative process. Content analysis as a research technique has been described by among others BERELSON (1952), OSGOOD (1959), POOL (1959), NORTH, HOLSTI, ZANINOVICH & ZINNES (1963), MARSDEN (1965) and HOLSTI (1969). Their views on content analysis differ as to levels of precision–some of them regard the technique from a very narrow and limited viewpoint (e.g. BERELSON) while others view it in a broader perspective. For our purpose a definition of content analysis given by HOLSTI (1969) constitutes the best starting-point.

> Content analysis is any technique for making inferences by objectively and systematically identifying specified characteristics of messages. (HOLSTI, 1969, p 14)

We regard content analysis as a predominantly qualitative analysis. We try to study the latent content of the telephone calls since we want to interpret "the message" in its context, i.e. as a part of the entire communication taking place in a distance education situation.

Of course, it would be possible to use solely quantitative measures, such as the length of each call in minutes and seconds. If we use a single measure like that it will tell us nothing more than that certain persons have more to say than others. To ascertain which of the two conversation partners talks most we can measure how much each of them talks, which is still a simple quantitative measurement. It is also possible to make a note of who takes the initiative in the conversation–tutor or student–and relate that circumstance to the time it takes to clear up a problem. All these measurements are easy to register but they are not altogether satisfactory in elucidating the importance of the telephone conversation in an educative process.

Another quantitative technique would be to measure the manifest content. The procedure implies a quantification of manifest symbols, e.g. to count the number of times a word or an expression occurs in the conversation. This method has considerable advantages as a research technique since there is likely to be good reliability. When the latent content is registered the reliability is sure to decrease, since an evaluation of latent content means a subjective interpretation of the message. At the same time, however, its relevance for the communicative process will increase. In order to describe the telephone communication and evaluate its importance to correspondence education we have chosen to register the latent content of the telephone calls, in spite of all the difficulties involved in this approach.

As one and the same call may contain discussions of many different problems it was necessary to find a method of content analysis that took into consideration the various problems discussed. For this purpose a pilot study was carried out in which the content of a number of recorded telephone calls was analyzed according to two different methods (FLINCK, 1976b). A schedule of categories was de-

signed (see FLINCK, 1976b, p 35) and was used in both methods of analysis. The first method implied that we measured the time used to talk about the various problems categorized in the schedule. We then calculated the entire time for each category occurring in the call, and these measures were related to the total length of the call. The units calculated in this way made up a description of the content of the call.

According to the second method each call was divided into three equally long parts. The content of each part was judged separately and what was rated to be the chief content of each part was described in terms of a category included in the schedule. Thus, the content of each call was described in three parts.

A comparison between the two methods of analysis did not show any differences as to the judgement of the content of the calls—they gave principally the same result. There was, however, an obvious disparity in the amount of work required by the two methods. This difference determined which method should be used in the main investigation. Less time-consuming was the method implying a division of the call into three equal parts and a coding of each part separately.

The following procedure of content analysis was used. Each call was listened to four times. Before that the length of each call had to be calculated so that it could be divided into three equally long parts. The first three subsequent playbacks were used for the categorization. Each playback included a judgement of each third of the separate call. A period of at least one month elapsed between the playbacks of each call. Thus, bias was avoided. The fourth playback which took place an additional month later was used for a separate purpose which will be explained presently.

When coding the content we employed in the main the same schedule of categories as in the pilot study. We used four categories and made a note of who took the initiative—the tutor or the student—in what was to be discussed. The schedule of categories is described in Table 4.1.

Table 4.1 Schedule of categories

Symbol	Initiator	Contents
T-PS	Tutor	personal or social problems
T-ST	"	study technique problems
T-SM	"	subject-related problems
T-PO	"	practical or organizational problems
S-PS	Student	personal or social problems
S-ST	"	study technique problems
S-SM	"	subject-related problems
S-PO	"	practical or organizational problems

At the fourth playback we had the content of the entire call as the basis for judgement. The purpose was to register if—at any time during the call and irrespective of duration—the student mentioned any personal or social problems. The part-

method described previously was far too approximate to reveal the occurrence of a personal or social topic, since this topic had to be the main problem discussed in one third of the telephone conversation to be registered at all. That is why the fourth separate playback was made with the special instruction to code any reference whatever to personal or social problems.

4.3 Coding agreement in the content analysis

All the recorded telephone calls were coded by the same person, and each call was coded three times (Coding 1, 2 and 3; cp Table 4.2). At the fourth playback the coding was made by the same person (Coding 4). Besides, 10 per cent of the calls selected at random were coded by another judge. His first coding (Co-coding 1) was made for categorization according to the schedule of categories (cp Table 4.1), and his second (Co-coding 2) was based on the entire call, in the same way as at the fourth playback (Coding 4). This procedure made possible the calculation of the intracoding reliability and the intercoding reliability.

Totally 671 calls were recorded and by using a table of random numbers we selected 68 calls (10.1 per cent) for control. The coding reliabilities are calculated from the codings of these calls and are reported in the form of percentages (cp Table 4.2).

Table 4.2 Comparison between different Codings

Codings	Agreement		Deviation		Total number of coded calls
	n	%	n	%	
Total agreement in Coding 1, 2, 3 and Co-coding 1	53	78	15	22	68
Coding 1–Coding 2	64	94	4	6	68
Coding 1–Coding 3	59	87	9	13	68
Coding 2–Coding 3	60	88	8	12	68
Coding 1–Co-coding 1	64	94	4	6	68
Coding 2–Co-coding 1	59	87	9	13	68
Coding 3–Co-coding 1	54	79	14	21	68
Coding 4–Co-coding 2	67	99	1	1	68

Coding 1, 2, 3 and 4 made by the same person
Co-coding 1 and 2 made by a co-coder
Coding 4 and Co-coding 2 refer to the "fourth playback"

In 78 per cent of all the cases there is perfect agreement between Coding 1, 2, 3 and Co-coding 1. Studying the 15 calls where deviation occurs we find that in 11 cases the differences of opinion concern who initiated the problem discussed.

There is no disagreement as to the topics of conversation. This means that if we consider only the judgement of the content and disregard the initiator the agreement is as great as 94 per cent (64 out of 68).

In the remaining 4 cases where deviation occurs there are differences in the judgement of the content. Two of them concern the categories S-ST (study technique problems) versus S-SM (subject-related problems), the third case concerns the categories S-SM (subject-related problems) versus S-PO (practical or organizational problems). The fourth case has reference to the categories S-SP (personal or social problems) versus S-SM (subject-related problems). It must be considered to be within the margin of error to accept these coding divergences. The last one is, however, more difficult to accept than the three others.

We can also make the overall observation that there is almost total agreement between Coding 4 and Co-coding 2–whether any problem of a social or personal nature has been discussed in the entire call. This question can be difficult to judge, an observation already made in the pilot study. Reporting difficulties in defining clearly the real, latent content at the risk of making incorrect judgements, we argued among other things that:

> The problem brought up may owe its occurrence to a need of contact. This interpretation is speculative but probably not quite illegitimate. In other sections too, where the content was judged as belonging to a certain category we had a strong subjective impression that the things discussed could be categorized as a "social-personal problem". Not the words but the way they were said gave that impression. (FLINCK, 1976b, p 37)

Our intention has been to judge what was really said and not what we think the student actually wanted to say. Agreement is, however, very good in our control of a selected number of calls. The total impression of the coding must, however, be considered satisfactory as there is complete agreement in 78 per cent of the calls, and in 94 per cent if we consider only the judgement of the content.

In Table 4.2 we have reported both the intracoding reliability and the intercoding reliability. As to the intracoding reliability (Coding 1, 2 and 3) the degree of agreement varies between 87 and 94 per cent. The values can be considered acceptable. The intercoding reliability (Coding 1, 2, 3 against Co-coding 1) is not equally high, the agreement varying between 79 and 94 per cent, but also these values can be accepted. On the whole the third coding seems to be the one that displays the lowest degree of agreement.

Among Codings 1-3, which were made by the same person, Coding number 1 seems to be the one that has the highest agreement with the other codings as regards both intracoding and intercoding reliability. The latter should perhaps be considered the most essential control and the agreement between Coding 1 and Co-coding 1 is as high as 94 per cent. All four deviations in the two judgements can be related to the question of who initiated a problem discussed. Three of them concern subject-related problems and one a study technique problem. The judges coded the content in the same way in these four cases but they had different opinions about who was the initiator of the discussion.

According to what has been said in this section we can establish that the control of the coding reliability calculated on a number of telephone calls selected at random indicates that both the intracoding and the intercoding reliabilities are satisfying. Since we have found that coding number 1 seems to display the highest agreement with the others (Coding 2, 3 and Co-coding 1) these judgements will be used to describe the content of the telephone calls in the following analyses.

4.4 Telephone calls

The telephone calls were made on the initiative of the tutor. The pre-requisite for establishing a telephone contact is that the student has access to a telephone on which he can be called. The fulfilment of this demand was not used as a criterion for selection as a member of the experimental group. The distribution on the experimental group and the control group was made according to the procedure described in section 3.4.

When the students in the experimental groups answered the enrolment questionnaire they were asked to give a telephone number at which they could be called. In the Swedish group all but one gave a number and no one declared that he or she did not want to be called.

In the English group 3 students stated that they had no access to a telephone and 24 who could be reached by telephone did not want to be called. No reason was asked for, but some of them mentioned spontaneously that they had access to a telephone only at their places of work, where they did not want to receive calls concerning their studies.

Table 4.3 Participants and drop-outs in the telephone calls (Experimental groups)

	Swedish sample		English sample	
	n	%	n	%
Total number of students	129	100	111	100
Students with telephone calls	92	71	84	76
Drop-outs of telephone calls	37	29	27	24

Analyzing the distributions in Table 4.3 we cannot prove that they differ significantly ($\chi^2 = .60$, df = 1). Thus, the numerical difference of the distributions could be a mere chance. But there is in fact one difference between the Swedish sample and the English one. As mentioned in section 3.5 the criteria for being selected as a member in the two national groups are slightly different. In the English school the selection took place after the students had sent in their first assignments for submission, whereas the Swedish students were selected as soon as they applied for the course. In the Swedish sample 35 students never sent in the first assignments for submission–they are among the 37 students reported as drop-outs in Table 4.3. Of the remaining 2, one reported no access to a telephone and one never answered the calls. In the English sample 97 per cent of the students (108 out of 111) could actually be reached by telephone. In the Swedish sample the corresponding share is 73 per cent (94 out of 129).

The fundamental point is, however, that an approximately equal proportion of the students in the two groups received telephone tutoring and that the calls were recorded.

As the participants in the investigation studied at their own rate, they reached different points in their study work during the experimental period. A summary of this was given in Table 3.15 (cp p 54). Consequently, there is also a varying number of calls recorded for the students.

Table 4.4 Number of telephone calls

Number of calls	Study unit (lesson) number	Swedish group Number of students	%	English group Number of students	%	Total n of students	%	Total n of calls
5	1-5	30	33	56	67	86	49	430
4		17	18	5	6	22	13	88
	1-4	14		5				
	1, 2, 3, 5	2						
	2, 3, 4, 5	1						
3		20	22	10	12	30	17	90
	1-3	19		10				
	2, 3, 4	1						
2		19	21	6	7	25	14	50
	1-2	18		6				
	1, 3	1						
1	1	6	7	7	8	13	7	13
		92	100	84	100	176	100	671

Comparing Table 4.4 and Table 3.15 (p 54) we find certain differences. The number of students who made 5 submissions (according to Table 3.15) exceeds the number that had 5 telephone calls (according to Table 4.4). Neither does the number of submission occasions correspond to the number of calls in the other cases. There are many reasons for this lack of agreement. Some students sent in more than one set of assignments for submission at the same time and were then scored for one telephone call but for two or more submissions. It could also be difficult for the tutor to get in touch with a student on the telephone. Furthermore those students who did not have access to a telephone or did not want to be called are included in Table 3.15 but not in Table 4.4

Of all the students who were scored for a call 33 per cent of the Swedes and 67 per cent of the English students had 5 calls recorded. Together they make 49 per cent of the total number of students reported as students who received telephone calls. These shares correspond roughly to the percentage of students registered for 5 submission occasions.

The duration of the telephone calls varies greatly.

Table 4.5 The total number of calls

Call number	n	m (in min)	s (in min)	range (in min)
1	174	4.21	2.65	1.1–16.8
2	162	4.30	3.23	1.0–24.0
3	139	4.96	4.67	1.0–28.1
4	107	4.91	4.10	1.3–27.9
5	89	5.13	3.76	1.1–18.2
Total	671	4.62	3.67	1.0–28.1

The range of all the calls is 1.0–28.1 min., the average duration being 4.62 min. On the whole the average length increases call by call. This seems quite natural as tutors and students get to know each other little by little which probably makes the conversation flow better. We will later on return to the individual student and to the duration of the calls of the individual students.

The content of the telephone calls can be surveyed in a similar manner. The total result of the content analysis is reported in Table 4.6. The three parts of each call are reported separately in accordance with the procedure at the analysis.

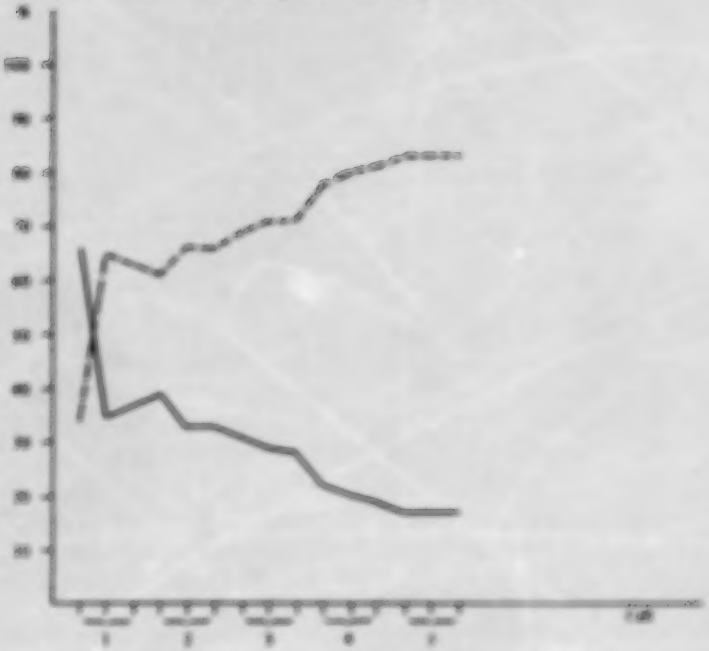
Table 4.6 A summary of the content analysis of the calls divided into parts

	Call 1			Call 2			Call 3			Call 4			Call 5			Total (all parts)	
Category	1:1	1:2	1:3	2:1	2:2	2:3	3:1	3:2	3:3	4:1	4:2	4:3	5:1	5:2	5:3	n	%
T-PS																0	0
T-ST			1	1	1	2		2	2							9	0
T-SM	52	56	54	60	54	52	41	39	37	24	21	20	15	15	15	353	28
T-PO	63	7	9	2		1	2									84	6
S-PS	2	6	15	4	4	13	6	3	8	5	2	9	2	3	12	94	7
S-ST	6	4	13	6	4	13	7	5	14	5	6	14	11	4	11	123	9
S-SM	51	103	91	89	99	77	83	90	77	70	76	62	61	67	50	1,136	56
S-PO			1			4			1	3	2	2			1	14	1
Σ	174	174	174	162	162	162	139	139	139	107	107	107	89	89	89	2,013	100
Σ T-	115	63	64	63	55	55	43	41	39	24	21	20	15	15	15		
Σ S-	59	113	110	99	107	107	96	98	100	83	86	87	83	83	83		
T %	66	35	37	39	34	34	31	29	28	22	20	19	17	17	17		
S %	34	65	63	61	66	66	69	71	72	78	80	81	83	83	83		

This survey of the content of the telephone calls provides certain manifest indications of the functions of these calls in the instructional process. First we can establish the dominance of subject-related problems (T-SM and S-SM). Totally, 84 per cent of the parts analyzed were coded in the SM category. In two thirds of these cases it was the student who initiated the discussion of the problem.

Secondly, we can establish that the initiative in the discussions was taken more often by the student the more calls there were. We have illustrated this change graphically in Chart 4.7.

Chart 4.7 The initiator of topics in the telephone calls



It is quite obvious – and natural – that the tutor takes the lead in the very first part of the first call. But already during the first call the student takes over the initiative. The initiative of the student increases by degrees. This indicates in itself that the telephone calls serve a function in the instructional process.

It is of particular interest to find out if students avail themselves of the telephone calls to discuss personal or social problems. According to the survey (cp Table 4.6) only 3 per cent of the analyzed parts of the telephone calls are dominated by such discussions. It is obvious that personal and social topics – when occurring – are introduced late in the call.

The result of the separate judgement where we marked if at any time during the call problems of a more personal or social nature were touched upon is shown in Table 4.8. The coding was very categorical – either yes or no.

Table 4.8 Calls containing a discussion of personal or social problems

Call number	Yes		No		
	n	%	n	%	Σ
1	40	23	134	77	174
2	45	28	117	72	162
3	47	34	92	66	139
4	46	43	61	57	107
5	37	42	52	58	89
Totally	215	32	456	68	671

This judgement shows that personal or social problems are mentioned in 22 per cent of all the calls. It can also be established that the relative occurrence increases with the number of calls—it is evidently easier to discuss this kind of problem the better people get to know one another. We have to emphasize that the judgement is very rough and ready and does not say anything about the intensity and seriousness of the discussion. We can only state that a discussion occurred.

The description given in this section will be followed up in the following sections. Here we can only establish that the telephone calls fulfilled a function in the instructional process. What this function is we will try to elucidate in the following.

4.5 The participants and the telephone tutoring

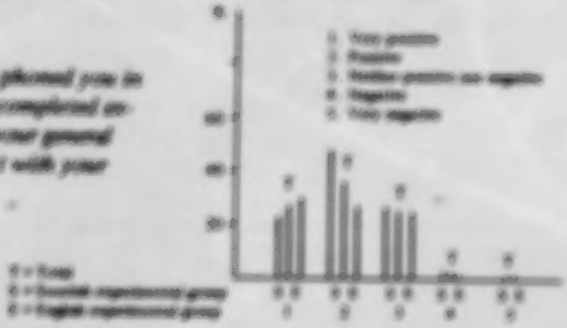
Before we proceed to study how the experimentation has turned out there are reasons for presenting some results with a bearing on only the experimental groups, that is the students being telephone-tutored. In this section results will be presented on one hand from the two groups—the Swedish and the English experimental groups—together, on the other hand separated.

4.5.1 Opinions of telephone tutoring

Information about the students' opinions of the telephone tutoring was collected by means of the post-questionnaire (*cp p 42*). In certain cases comparable questions from the drop-out questionnaire will be discussed, too. The discussion in this section is based on Tables 4.9–4.29 in the Appendix. For the sake of clarity only column charts will be reproduced in this context to visualize the outcome. Some of the questions in the post-questionnaire concern the general opinion about the telephone calls.

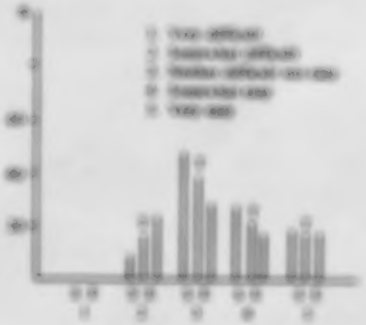
When we asked the students how they reacted to the telephone contact with their tutor (Chart and Table 4.9), almost two thirds of the total number of students answering the question expressed some degree of a positive experience of this contact. Only 3 per cent expressed a negative reaction. No differences can be observed between the Swedish and the English students—the same share of each group expresses a positive opinion.

Chart 4.9
In this course we have phoned you in connection with your completed exercise papers. What is your general reaction to this contact with your tutor?



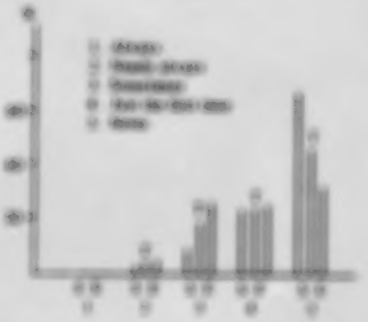
However, the positive reactions do not necessarily imply that the students found it easy to talk to their tutor and felt unembarrassed when receiving the calls. When we asked them if they thought the talking had been difficult or easy (Chart and Table 6.10) we found that the distribution of the answers from the total group - the Swedish and the English one - differed significantly from the expected distribution ($\chi^2 = 9.15^{**}$, $df = 2$). More students than expected have marked a neutral position (neither difficult nor easy). No statistically significant difference between the two national groups can be proved ($\chi^2 = 3.88$, $df = 2$). The essential results one draws from this would be that the students do not in any case consider it very difficult to talk with their tutors.

Chart 6.10
Do you think that talking by phone with your tutor has been difficult or easy?

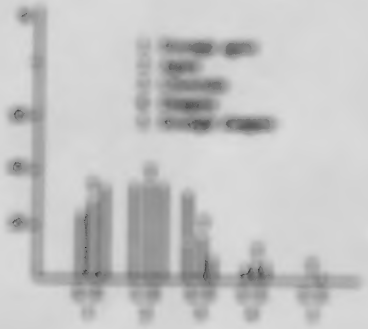


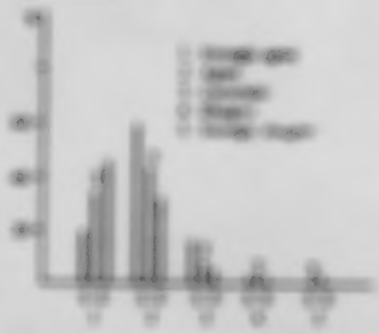
When we study the distribution of the answers to the question if the students felt embarrassed by knowing that their tutor was going to call (Chart and Table 6.11) we find no difference between those who stated no embarrassment and those who did feel embarrassed by the calls. This is true for the total group but if we look at the two national groups we find a statistically significant difference between them ($\chi^2 = 8.35^{**}$, $df = 2$). A greater share of the English students than of the Swedish ones found the situation embarrassing.

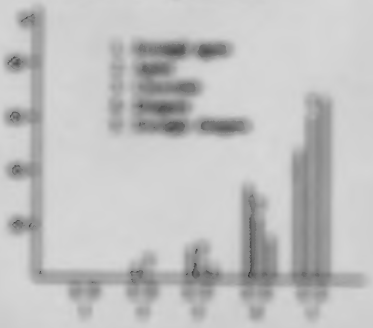
Chart 6.11
Has the knowledge that your tutor will phone you made you feel embarrassed or uncomfortable?

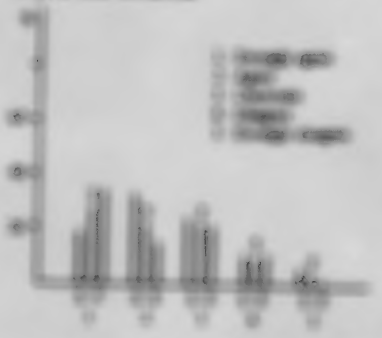


In addition to these more general questions the students answering the post-questionnaire had to consider a number of statements about the telephone calls. Some of them concerned affective conditions.





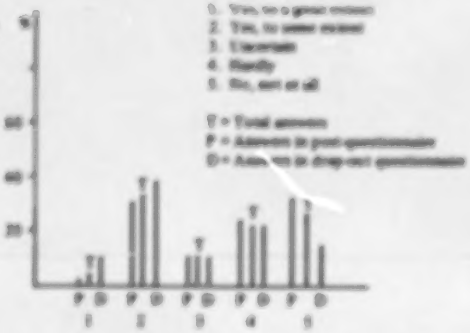




The answers to this question did not yield the same unambiguous result, but it is quite clear that a majority of the students found the telephone calls positive also in this respect.

In this context it is reasonable to wonder if participants in our investigation – whether they are experimental students or control students – feel isolated when they study by correspondence. The question was asked in exactly the same words in the post-questionnaire and the drop-out questionnaire.

Chart 4.16
While you have been studying this course have you felt isolated?



Studying the *distribution* of the answers from all who *answered* the question we find that half the students rejected the notion of feeling isolated. But if we compare the distributions of those who answered the post-questionnaire – and consequently completed the course – with those who answered the drop-out questionnaire, we find a statistically significant difference ($\chi^2 = 15.15^{**}$, $df = 4$). The former students denied the feeling of isolation to a greater extent than the drop-out students. It cannot be verified if this is a causal connection – we can only establish that there is a co-variation. There is, however, reason to come back to this finding in a later context.

It is obvious that the students who were telephone tutored experienced this positively from an affective point of view. But we will also see if the telephone calls had any effect as to the students' interest in intellectual activities.

Chart 4.17
The telephone calls have stimulated my interest in studying in general.

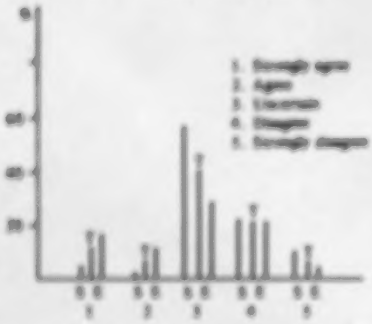


Chart 4.18
The telephone calls have helped me to become more interested in the subject.

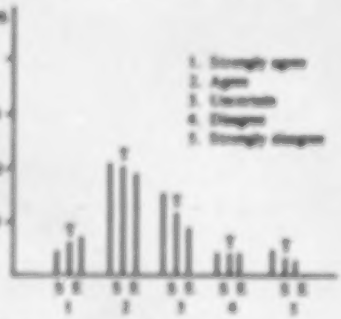
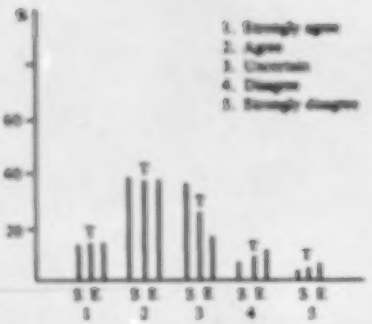


Chart 4.19
The telephone calls have made my studies more stimulating.



We asked the students if the telephone calls had stimulated their interest in studying in general (Chart and Table 4.17), if the telephone tutoring had made them more interested in the subject (Chart and Table 4.18), and if it had made their studies more stimulating (Chart and Table 4.19). Looking at the distribution of the answers to the first question we find that it differs significantly from an expected distribution of answers ($\chi^2 = 46.18^{***}$, $df = 4$). The deviation implies that a greater share are neutral when it comes to the stimulation of a general interest in studying. On the other hand, the students state that the telephone calls have helped them to become more interested in the subject they were studying and made their studies more stimulating. As to the first question—about interest in studying in general—we find a more positive attitude among the English students than among the Swedes, a proportionally greater share of whom have stated a neutral position.

It is also of interest to study the students' reactions to the telephone calls in the purely educational respect. Were they helped to gain a better understanding of the content of the course (Chart and Table 4.20) and could they more easily identify key points in the course material (Chart and Table 4.21)?

Chart 4.20
The telephone calls have helped me to a better understanding of the content of the course.

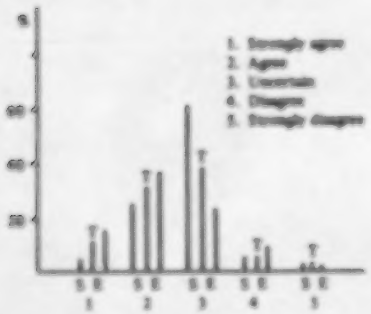
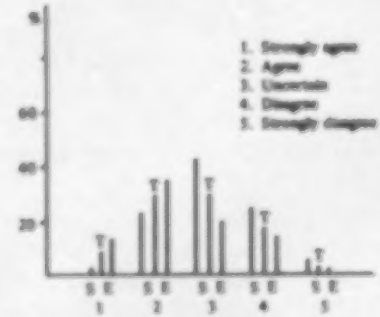


Chart 4.21
The telephone calls have helped me to identify key points in the course.



We find that the students who considered the telephone tutoring helpful to these ends are in the majority. If we test each of the two distributions against an expected distribution we find that there is a statistically significant difference in both (to understand the content better: $\chi^2 = 64.55^{***}$, df = 4; to identify key points: $\chi^2 = 35.78^{***}$, df = 4). Comparing the Swedish and the English groups we find that the English students are more positive to the two statements (understanding of the content: $\chi^2 = 12.60^{**}$, df = 2; identifying of the key points: $\chi^2 = 10.07^{**}$, df = 2).

Other educational aspects can be elucidated by the students' answers to the following question: Did the calls make it easier for them to cope with particular difficulties in the course (Chart and Table 4.22) and were they helped with problems they could not otherwise have managed (Chart and Table 4.23)?

Chart 4.22
The telephone calls have made it easier to get over particular difficulties in the course.

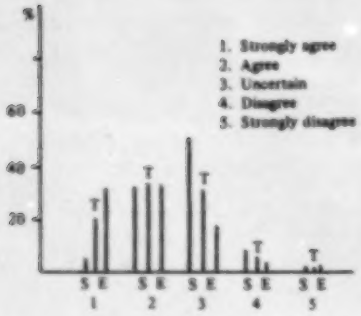
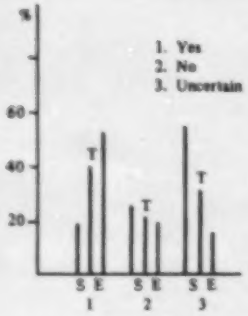


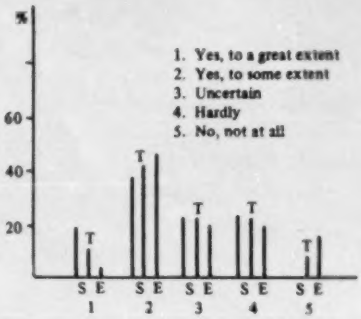
Chart 4.23
Do you think that telephone conversations with your tutor have helped you with anything you otherwise could not have managed?



According to the students the telephone calls helped them master special difficulties more easily. Comparing the distributions of the answers from the two national groups we find a statistically significant difference ($\chi^2 = 13.83^{***}$, df = 2). The English students are more positive to the statement than the Swedes. The students in the total group are also positive to the question if the telephone calls have helped them with problems they could not otherwise have managed ($\chi^2 = 6.83^{*}$, df = 2). The distribution is tested against an expected distribution. Also in this case we find a statistically significant difference in the distributions of the answers from the two national groups ($\chi^2 = 20.39^{***}$, df = 2), the English group being more positive than the Swedish one.

It could be of a certain interest in this context to compare how the students who were *not* telephone tutored regarded the possibility of being helped by telephone contacts with a tutor. This question had a more general wording (Chart and Table 4.24).

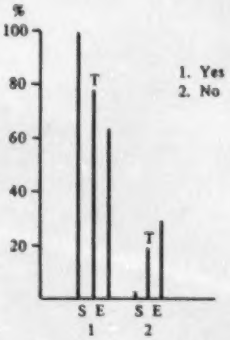
Chart 4.24
If you had had the opportunity during your work with the course to call your tutor by telephone, do you think that it would have helped you? (Control groups)



The outcome is rather unambiguous. Testing the distribution of the answers from the total group against an expected distribution we find a statistically significant difference ($\chi^2 = 23.91^{***}$, df = 4). A majority of the students in the control group think that they could have been helped by a telephone contact if this had been available. If this result shows that correspondence students expect telephone tutoring to be beneficial the answers given by those who got telephone calls indicate that these expectations were fulfilled. The calls gave the desired help.

The telephone calls nearly always emanated from the tutor. The tutor was, however, also available for telephone calls at fixed hours, but very few students made use of this opportunity to call him. In the post-questionnaire some questions concern this matter. We asked if the students would have liked to call their tutor (Chart and Table 4.25), which way of asking for support they would prefer–calling or writing–(Charts and Tables 4.26 and 4.27), and how they would react to additional costs (Charts and Tables 4.28 and 4.29).

Chart 4.25
Would you have liked to be able to phone your tutor whenever you had a problem with the course?



A distinct majority of the students state that they would like to be able to call their tutors. In the Swedish group all but one gave this answer. In the English group the share is smaller but it still constitutes a distinct majority. The result agrees very badly with the fact that only a few students really made use of the facilities available. Various explanations are possible. The period available for calling–a couple of hours on a specific day–might have been inconvenient owing to personal circumstances. It is also likely that problems and difficulties experienced did not coincide with the telephone hours available.

Chart 4.26
If it were necessary for you to contact your tutor about a problem encountered in the course, would you prefer to phone or to write? (Experimental groups)

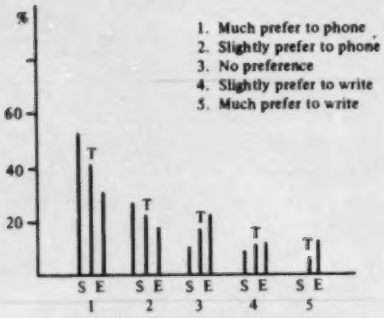
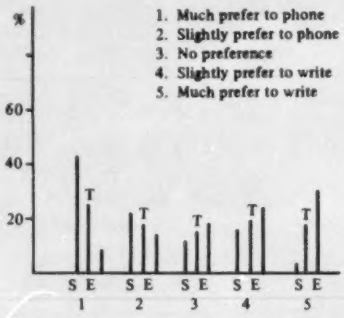


Chart 4.27
If it were necessary for you to contact your tutor about a problem encountered in the course, would you prefer to phone or to write? (Control groups)



The second issue concerned which way the students would prefer to get in touch with their tutors—by mail or by telephone. This question was given to both the experimental groups (Chart and Table 4.26) and the control groups (Chart and Table 4.27).

In the experimental groups 62 per cent of the students would prefer to call, whereas 18 per cent would prefer to write. There is a statistically significant difference in the distributions of the Swedish and the English experimental groups ($\chi^2 = 11.09^*$, df = 3). In the Swedish group more students prefer calling to writing.

The answers given by the students in the control groups present a much more uniform distribution (Chart and Table 4.27). We cannot prove that it differs significantly from an expected distribution ($\chi^2 = 1.74$, df = 4). It is, however, interesting that here, too, we find a statistically significant difference in the distributions of the Swedish and the English groups ($\chi^2 = 14.17^{***}$, df = 2). The Swedish control students prefer to a greater extent to call whereas the English control students to a greater extent favour writing. This difference—which is evident also in the experimental group (cp Chart 4.26)—is difficult to explain. It might depend on the choice of subject—the Swedish group studying Economics, the English group French—but it is more likely that it depends on differences in customs and practices between the two countries, the Swedes being more apt to use the telephone as an aid in communication.

The question asked about the costs of the telephone facilities can be expected to show answers analogous to those reported above. The question was given to all the students—the two experimental groups (Chart and Table 4.28) and the two control groups (Chart and Table 4.29).

Chart 4.28
No charge has been made for this telephone service. If in the future you wanted to have the same service in other courses, would you then agree to pay a slightly higher fee? (Experimental groups)

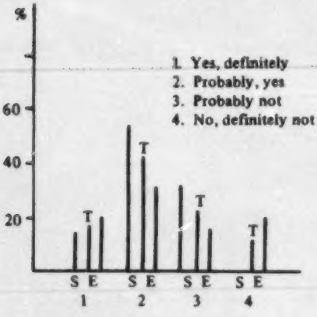
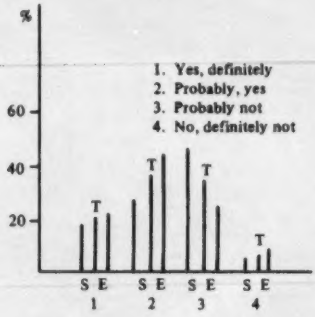


Chart 4.29
If this opportunity–to talk to your tutor by telephone–had been available, would you then have agreed to pay a slightly higher fee? (Control groups)



In the experimental groups a majority of the students obviously consider the telephone calls so valuable that they are prepared to pay an extra fee to get telephone tuition in future correspondence courses ($\chi^2 = 23.00^{***}$, df = 3). But also the students who had no telephone contact with their tutors apparently think highly of this kind of tuition, since a majority of them would be prepared to pay the extra fee to have access to telephone calls ($\chi^2 = 15.65^{**}$, df = 3). We cannot, however, prove that there are any statistically significant differences in the distributions of the answers between the two national samples either in the experimental groups ($\chi^2 = .77$, df = 1) or in the control groups ($\chi^2 = 2.79$, df = 1).

To sum up we can establish that most of the students receiving telephone tutoring in connection with the returned assignments for submission regarded this as positive in different respects. A majority of them reported that the telephone contact with their tutors was a very positive experience. They did not find it difficult to talk to them on the telephone and felt no embarrassment knowing that the tutor was going to call. As a whole they experienced these calls as a stimulation in their study work and appreciated that somebody showed an interest in their studies.

A majority of the students state that they were helped by the telephone calls in their work with the study material. They were helped to a better understanding of the content of the course material, they could more easily identify the key points in the course, and the telephone calls made it easier for them to master particular difficulties in the course. A distinct majority of the students would like to have an opportunity to call their tutors themselves to get assistance but few really did so. They would also prefer calling to writing when they were in trouble. Finally, they consider this help by telephone so valuable that they would be prepared to pay an extra fee to have access to such facilities.

The conclusions drawn in the preceding are based on the total result in the two experimental groups. We have also examined in what way the students' attitudes toward the telephone tutoring are related to the background data gathered by means of the enrolment questionnaire. A number of chi-square analyses were performed, but very few statistically significant differences could be found in the distributions. Out of 165 analyses only 5 gave differences in relation to an expected distribution. Significant differences appeared in three cases when the attitudes were related to the student's study situation and in two cases when they were related to the student's previous experience or lack of experience of a correspondence course. Consequently, the differences discussed previously concerning the attitudes to telephone tutoring cannot in general be traced back to differences in background variables.

4.5.2 The content of the telephone calls

In a previous section an account was given of the content analysis of the telephone calls (cp section 4.2 p 60). The entire result of this analysis was presented in Table 4.6 (p 67). It indicates among other things that the initiative in what was discussed was gradually more and more often taken by the students and that the problems most frequently discussed concerned subject-related questions. A special interest is attached to the question if personal or social problems were discussed in the telephone calls inasmuch as a positive result can be used as a support for the telephone being an aid to bridge a supposed isolation of the correspondence student. We have chosen to give special attention to these three conditions.

In the content analysis two different types of analyses can be separated. In the first one–the main analysis–the calls were divided into three equally long parts and each part was categorized as to its principal content according to a given schedule of categories (cp p 62). The second analysis–the subordinate analysis–implied that we listened through the entire call to note if, at any time during the call and independently of duration, any personal or social problem was discussed.

For the analyses presented in this section the data from the content analysis have been rearranged in the following way.

The first problem concerns who took the *initiative* in what was discussed. Thanks to the construction of the schedule of categories we are able to determine this for each third of the call. For each call we found out who–the tutor or the student–initiated the talk in at least two of the three parts. The content of each call was then classified as initiated either by the tutor or by the student.

The second question concerns whether the content of the call can be classified as having reference to *subject-related problems* or not. The procedure was analogous to the former, i.e. what characterized at least *two thirds of the call* was used to classify the whole call. In this case we disregarded who had taken the

initiative. The classification only tells whether a call was dominated by subject-related problems or not.

The third question concerns if the call contains a discussion of *problems of a personal or social nature.* Our standpoint in this case is based on information from both the main analysis and the subordinate analysis. According to the *main analysis* the judgement can be passed from the category S-PS (the student actualizes a personal or social problem). Theoretically the category T-PS with the tutor as the initiator could also be considered but that category received no marking in the content analysis (cp Table 4.6, p 67). If in each call any *one of the three parts* is categorized as dealing with a personal or social problem the whole call is classified as a call where personal or social problems are discussed. By this procedure we classified the calls as containing a discussion of personal or social problems or not.

The *subordinate analysis* was performed differently. The procedure was to mark if, at any time during a call and for any duration, an individual discussed a personal or social problem. Thus, we classified a call as containing a discussion of such problems from a mere mention of anything of a personal or social nature.

Reporting the results below we present the findings from the two national groups separately.

If we first consider who takes the *initiative* in the discussion of various problems and relate this to the duration of each call we find that the calls are longer when the problems are initiated by the student.

Table 4.30 The duration of the calls related to who initiates the discussion. The Swedish sample.

Call number	Initiative by	Duration in minutes m	s	t	p
1	T	3.28	.98	−2.67	***
	S	4.31	1.24		
2	T	2.50	1.45	−4.52	***
	S	4.96	1.91		
3	T	3.13	1.55	−3.45	**
	S	5.52	2.18		
4	T	2.63	.54	−3.88	***
	S	4.78	1.97		
5	T	4.93	2.84	− .36	n.s.
	S	5.51	2.29		

T = Tutor
S = Student

Table 4.31 The duration of the calls related to who initiates the discussion. The English sample.

Call number	Initiative by	Duration in minutes m	s	t	p
1	T	2.42	.39	−5.22	***
	S	5.02	1.73		
2	T	2.24	.38	−5.47	***
	S	4.97	1.64		
3	T	2.21	.34	−3.90	***
	S	4.36	1.52		
4	T	2.18	.63	−3.68	**
	S	4.97	1.85		
5	T	2.03	.48	−3.67	**
	S	4.87	1.81		

T = Tutor
S = Student

The comparisons between the durations of tutor- and student-initiated discussions have been made by means of t-tests and we find in all cases but one that there are statistically significant differences. In both the Swedish and the English samples and regardless of what is discussed the calls last longer when the student is the initiator.

In the Swedish sample we cannot prove any statistically significant difference as to call number 5. The most plausible explanation is that the number of calls where the tutor is the initiator is very small (n = 4).

These findings are hard to interpret. One explanation might be that the students experience the telephone calls as an asset for their studies and therefore take the opportunity to discuss various problems at length with their tutors. They seem to be active and this takes time. We have tested if there is any co-variation between any of the background variables and the question of who initiates the telephone discussions. This was studied by means of chi-square analyses and the results are to be found in Table 4.32 in the Appendix. We cannot prove any statistically significant differences in the distribution of the variable initiator (the one who takes the initiative in the discussion in the telephone call) on any of the background variables (sex, age, marital status, study situation, occupation, educational level, previous correspondence studies, parallel studies). Neither could we find any differences when we related the variable initiator to our three motive groups (cp p 42). The results of these analyses are the same in the two national samples.

The second question regarding the content of the telephone calls concerns the extent to which *subject-related problems* enter into the discussions. Also this

variable has been related to the duration of the calls and comparisons have been made by means of t-tests. However, the number of calls classified as dealing with subject-related problems is very large, comprising 90 per cent of the total. The comparison between the duration of calls with and without a dominance of subject-related problems will therefore be hard to carry out. For the sake of clarity we present in Table 4.33 the average duration of all the telephone calls related to the question if they treat subject-related problems or not.

Table 4.33 The ... tion of the telephone calls in relation to the dominance of subject-related problems in at least two thirds of the call

Sample	Classification	Number of calls	Duration in minutes m	s	t	p
Swedish	Subject-problems	275	4.37	1.88	.91	n.s.
	Other	44	4.06	1.40		
English	Subject-problems	332	4.19	1.61	−1.35	n.s.
	Other	17	5.12	2.27		

Because of the unequal distribution of the telephone calls in this respect it is for technical reasons impossible to study the distribution in relation to the background variables. We can only make the general statement that in a majority of the telephone calls exchanged the discussions concerned subject-related problems.

We have, however, tested if there is any difference between the Swedish sample and the English one as to the extent of calls dominated by subject-related problems. This chi-square analysis gives statistically significant differences ($\chi^2 = 16.28^{***}$, $df = 1$). If we examine the distributions we find that the English students (studying French) discuss subject-related problems to a greater extent than the Swedish students (studying Economics). There are reasons for returning to this finding later on.

The last question in this section concerns the telephone calls in which discussions about *personal or social problems* could be identified.

The *main analysis gives* the number of calls classified as containing one part or more dealing with „personal or social problems. When the result of this classification is related to the duration of the calls the following is found for the Swedish and the English samples (cp Tables 4.34 and 4.35).

It is quite obvious that calls scored for the category personal or social problems last longer than calls not scored for such topics. The means given for the duration of the calls prove statistically significant differences for each call in both samples. It should be noticed that the classification of the calls made here implies that the category is required to be dominant in only one third of the call. Thus, the category will not necessarily dominate the call as a whole.

Table 4.34 The duration of the calls related to the dominance of personal or social problems in at least one third of the call. The Swedish sample.

Call number	Classification	Duration in minutes			
		m	s	t	p
1	Pers.soc. problems	5.30	1.42	2.14	*
	None	5.13	1.15		
2	Pers.soc. problems	6.47	1.99	2.98	**
	None	5.74	1.88		
3	Pers.soc. problems	6.75	2.29	1.99	*
	None	6.09	2.12		
4	Pers.soc. problems	6.25	2.30	2.39	*
	None	5.97	1.66		
5	Pers.soc. problems	7.45	1.97	2.68	*
	None	6.90	2.29		

Table 4.35 The duration of the calls related to the dominance of personal or social problems in at least one third of the call. The English sample.

Call number	Classification	Duration in minutes			
		m	s	t	p
1	Pers.soc. problems	7.25	1.76	4.74	***
	None	5.85	1.39		
2	Pers.soc. problems	6.80	1.90	4.51	***
	None	5.71	1.53		
3	Pers.soc. problems	6.80	1.66	4.68	***
	None	5.62	1.22		
4	Pers.soc. problems	7.01	1.12	3.72	***
	None	6.56	1.70		
5	Pers.soc. problems	6.51	1.13	3.56	***
	None	5.71	1.33		

We have also tested the result of this classification in relation to the various background variables. Chi-square analyses prove no differences in this respect. This could mean that telephone calls including a discussion of personal or social problems are found to the same extent among students with various background conditions as we have defined them in our study (cp Table 4.36 in the Appendix).

What has been discussed up to now is based on information gathered from the main analysis. But, as stated before, we can also study the question at issue with data from the subordinate analysis. In this, if at any time and for any duration,

personal or social problems has been brought up in the telephone call we then have classified the call as containing a personal or social discussion.

The result of this classification has been related to the duration of the calls for the two samples separately.

Table 4.37 The duration of the calls related to the occurrence of any personal or social problem whatever in the telephone discussion. The Swedish sample.

Call number	Presence of pers. soc. problems	n	Duration in minutes m	s	t	p
1	Yes	53	3.60	1.63	0.08	ns
	No	80	3.64	1.83		
2	Yes	39	4.05	1.31	4.58	***
	No	65	3.41	1.87		
3	Yes	26	4.17	1.96	3.40	ns
	No	42	3.86	2.03		
4	Yes	20	3.60	2.31	0.15	ns
	No	26	3.40	1.13		
5	Yes	17	0.58	2.01	3.33	***
	No	24	2.80	1.49		

Table 4.38 The duration of the calls related to the occurrence of any personal or social problem whatever in the telephone discussion. The English sample.

Call number	Presence of pers. soc. problems	n	Duration in minutes m	s	t	p
1	Yes	30	4.34	1.84	4.72	***
	No	54	3.19	.75		
2	Yes	25	4.33	1.46	4.61	***
	No	52	3.17	1.04		
3	Yes	21	3.74	1.73	3.74	***
	No	50	3.01	.78		
4	Yes	24	4.46	1.47	7.21	***
	No	33	2.90	.78		
5	Yes	20	4.43	1.91	5.68	***
	No	36	3.14	.88		

Aside from this basis of assessment it is obvious that there is a relation between the duration of the calls and the circumstances that a discussion of personal or social problems occurs during the call. The means of the duration of the calls differ significantly. That implies that the calls tend to be longer when a discussion of a personal or social nature is included.

We have also studied whether there is any co-variation with the various background variables, but we can find none. None of the chi-square analyses proves that the distribution among these variables differs from an expected distribution (cp Table 4.39 in the hypothesis).

The last question at issue - the discussion of personal or social problems in the telephone calls - is given the same answer whatever method we use to analyse it. The calls tend to be longer when such problems are introduced. There is however, one difference in the results of the two methods. According to the main analysis 39.7 per cent (61 of 176) of the students have participated in telephone calls classified as containing a discussion of personal or social problems. According to the subordinate analysis 60.8 per cent (107 of 176) of the students have experienced such telephone calls.

The results presented in this section indicate among other things that if we re-arrange the information gained from the content analysis and relate it to the duration of the calls, we find that the calls tend to be longer when the students take the initiative in the discussion. We have also found that subject-related problems are discussed to a far greater extent than any other problems. We have finally determined that to no small degree the students discuss personal or social problems with their tutors on the telephone.

9 Comparison between experimental and control groups in the experiment

In this chapter we present the results of the comparisons between the experimental groups and the control groups on the basis of the hypotheses stated in Chapter 5. They imply that at the end of the experiment the experimental students – who have received telephone tutoring – differ from the students in the control group – who have had no telephone tutoring – in achievement measured by a final test, in study time measured in months, and in attitudes to the studies and the study form.

The comparisons will follow two principles. Each achieved sample will be discussed separately. In each sample the results will be given in the order achievement, study time and attitudes. Additionally we discuss main effects of interactions between these variables.

The separate treatment of the Swedish and the English students is justified primarily by the fact that they have studied different and very displaced subjects. Thus it will be possible to shed some light on how students of different subjects can benefit from telephone instruction. It could also be justifiable to compare the two samples by the very reason that they are collected from different centres. There is however no possibility to distinguish between subject and centre with the design used for this investigation. Differences in the Swedish will be ascribed to a difference in subject rather than to a difference in centre. Thus the results will be presented for the samples Economics and French, the first being composed of Swedish correspondence students and the second of students from an English correspondence school.

No existing data will play an essential role in the comparisons made to illustrate the effects of the telephone tutoring. Even an attempt to bring the problem to the fore again. Drop-out in a correspondence will always affect the possibility of generalizing and as the drop-out rate is high in many points of our study, we must make very cautious conclusions.

In a previous section five sub-groups of participants were discussed and defined (cp section 5.5, p 53). The discussion in this chapter is primarily based on data from the two sub-groups completers and fulfillers. Completers are those who have completed the course as far as the correspondence school requires (cp. they have sent in five sets of assignments for correction). When discussing the study time we will also draw from the sub-group 4 – should be added that most of the completers are also fulfillers.

Fulfillers are those students who have fulfilled the requirements of the experiment. They have answered the questionnaire questionnaire, sent in five sets of assignments for correction, participated in the telephone tutoring if they belong to the

experimental group, answered the post-questionnaire and takes the final test. Data from the sub-group fulfillers are used when we discuss achievement because this is measured by means of the final test.

When discussing attitudes to the studies and the study form we also use data from the sub-group fulfillers. However, as the items in the post-questionnaire on which we base our discussion are found in the drop-out questionnaire as well, we are able to include information from the sub-group drop-outs 1 (*cp* p 53) when we give a separate presentation of the students' attitudes to their studies and the study form.

The arrangement described here has been used in order to include as many students as possible in our comparisons and thereby reduce the effects of the drop-out rate. Data are also missing, however, when students have not answered certain items in the questionnaires. Owing to the instructions given, the number of answers in the drop-out questionnaire does not come up to the number of registered drop-out questionnaires. This is due to the fact that, depending on the answers given to certain items, the students were instructed either to answer the remaining items or to go no further in the questionnaire. Thus, figures do not correspond in all cases.

In the process of data analysis we have used different methods depending on the type of information utilized and the degree of precision of the variable. In chi-square analyses and t-tests prevalent demands for using these statistical devices have been met (*cp* SIEGEL, 1956; HAYS, 1963). Further we have used a two-way analysis of variance to study the interrelationship and interaction of independent and dependent variables. The analyses have been carried out by means of programs available through the SPSS (Statistical Package for the Social Sciences) (se NIE et al, 1975).

Dependent variables in these analyses of variance are either achievement measured by the final test or study time measured in weeks. Independent variables are background variables including the motive groups, grouping – i.e. experimental and control groups – and attitudes. We have selected a level of significance of $\alpha = .05$.

Owing to the experimental design of the investigation we have always used grouping as one of the independent variables when performing the analyses of variance. Grouping has been joined to another independent variable and tested against one of the dependent variables. In testing the statistical hypotheses we argue that unless the variation between groups is significantly greater than the variation within groups there is no basis for concluding that the groups differ.

Our strategy has been the following. First we have tested the significance of the interaction of the two independent variables. If the interaction is not significant, the significance of the additive effect of the two independent variables is tested. After that we have tested the significance of the separate effect of each one of the independent variables.

5.1 Results from the group studying Economics

The results presented in this section originate from the Swedish sample. The students studied a course in Economics (cp p 39).

5.1.1 Achievements and study time

As one measure of achievement we have used the result of the final test. During the course of the studies other measurements of achievement were collected as well, viz. the results of the assignments for submission. While each set of assignments for submission covers the content of one single study unit or lesson, the final test covers the entire course.

We have compared the results from the experimental group and the control group on all the measurements of achievement and tested the differences by means of t-test. The outcomes of these testings are presented in Table 5.1.

Table 5.1 Comparisons of achievements on assignments for submission and final test. Students of Economics

Events	Group	n	m	s	t	p
Assignments 1	Exp	94	4.56	.80	.56	n.s.
	Contr	59	4.49	.75		
Assignments 2	Exp	89	4.24	.88	.19	n.s.
	Contr	53	4.21	.82		
Assignments 3	Exp	73	3.49	.90	-.04	n.s.
	Contr	42	3.50	.89		
Assignments 4	Exp	54	3.20	1.14	.98	n.s.
	Contr	34	2.97	1.00		
Assignments 5	Exp	43	3.63	.87	.40	n.s.
	Contr	33	3.55	.81		
Final test	Exp	43	3.96	.67	1.33	n.s.
	Contr	31	3.73	.84		

We cannot prove any statistically significant differences in achievement between the two groups either concerning the final test or the results on each specific submission occasion. The circumstance that the achievements of the experimental group and the control group do not differ on the first set of assignments for submission can be considered as a certain indication of parity in the initial phase. Having at that moment not yet had a telephone call from their tutor the experimental students work under almost the same conditions as the students of the control group. The only difference is that the former know that the tutor will call when the examined assignments are returned.

The fact that telephone tutoring was introduced in the experimental group does not seem to affect the achievements in either direction. Therefore we can conclude that with the experimental design utilized in this investigation, with students studying Economics and fulfilling the experiment, and with the statistical demands we have selected, the introduction of telephone tutoring has shown no effect on the achievements of the students.

How, then, was the study time affected by the introduction of an instructional element in correspondence education involving direct oral contact? The study time has been calculated as the number of weeks passing from the date of application until the date when the fifth set of assignments for submission was received by the school..

Table 5.2 Study time in weeks. Students of Economics

Grupp	n	m	s	t	p
Exp	45	30.96	14.00	-.30	n.s.
Contr	33	32.16	11.92		

No statistically significant difference between the experimental group and the control group can be proved in this case either. Consequently, we cannot conclude that the introduction of telephone tutoring extends or reduces the study time.

5.1.2 Attitudes to the studies

In the post-questionnaire as well as in the drop-out questionnaire the students were asked to answer a number of questions concerning their attitudes to the studies and the study form. Comparisons have been made above all between the experimental group and the control group, but also between those who answered the post-questionnaire–the fulfillers–and those who answered the drop-out questionnaire–drop-outs 1.

The distribution of answers over the experimental group and the control group are reported separately in Tables 5.3-5.12 in the Appendix. In Table 5.13 below we present a survey of the results from the chi-square analyses performed to test possible differences in the distributions in each group. In the column "Variable" we have given a key word to facilitate interpretation.

In four of the comparisons we find statistically significant differences in the distributions between the experimental group and the control group. The first concerns if the course in Economics answered the students' expectations. Looking at the two groups together to begin with, we find that only 7.7 per cent of the students hold the opinion that the course hardly or not at all came up to their expectations, while 20 per cent state that the course surpassed their expectations and the remaining 72.3 per cent think that their expectations were met. There is, however, a difference between the experimental group and the control group (χ^2 =

Table 5.13 A summary of chi-square analyses: groups–attitudes; form of questionnaire–attitudes. Students of Economics

Variable	Exp-Contr independently of Fulfillers or Drop-outs 1	Exp.group Fulfillers –Drop-outs 1	Contr.group Fulfillers– Drop-outs 1
1. expectations	*	n.s.	n.s.
2. interest	***	n.s.	n.s.
3. knowledge	**	***	***
Course material:			
4. difficult/easy	n.s.	n.s.	n.s.
5. inspiring/dull	n.s.	n.s.	n.s.
Assignments:			
6. difficult/easy	n.s.	n.s.	n.s.
7. inspiring/dull	n.s.	n.s.	n.s.
8. examination of	n.s	n.s	n.s
9. study form	*	n.s.	n.s.
10. isolation	n.s.	n.s.	n.s.

6.43*, df = 2). A greater share of the experimental students report that the course surpassed their expectations. Neither in the experimental group nor in the control group can any differences in the distributions be proved between those who fulfilled the experiment and those who dropped out from the course.

The second item where we find differences between the experimental group and the control group concerns if the students think that their interest in Economics increased or diminished during the course. First we can establish that a majority of all the students consider their interest increased (67.5 per cent). There is a distinct difference between the two groups in this respect ($\chi^2 = 21.86^{**}$, df = 2), a greater share of the experimental students stating increased interest. No difference between fulfillers and drop-outs can be proved in any of the questionnaire-groups.

The question if the students think that their knowledge of the subject increased during the course, also shows significant differences in the distribution of answers in the experimental and the control groups. All in all 40.8 per cent regarded their knowledge as considerably increased, 57.5 per cent report that it increased a little, and 1.7 per cent state no increase at all. The difference between the two groups ($\chi^2 = 7.50^{**}$, df = 1) means that more experimental students than control students consider their knowledge considerably increased. We can also note a difference in the distributions between fulfillers and drop-outs in each group. Students described as fulfillers–i.e. those who answered even the post-questionnaire–think to a greater extent that their knowledge of Economics has increased considerably.

The last of the items where significant differences occur between the experimental group and the control group concerns the students' opinions about the way of study ($\chi^2 = 8.80^*$, df = 3). Totally a distinct majority of the two groups (74.2 per cent) is positive to the study form. The distributions indicate that a greater share of experimental students are positive to the way of studying while a greater part of the control students are negative. No differences between fulfillers and drop-outs can be proved in either of the two groups.

For the remaining items we cannot prove any statistically significant differences between the experimental group and the control group. Neither do the fulfillers and the drop-outs differ in either of the groups. Examining the distributions over these items in all we find as regards the students' opinions about the course material that a majority of them consider it to be difficult (58 per cent), whereas only 11.7 per cent found it easy. An equally large part (57.5 per cent) is of the opinion that the course material was inspiring.

The students' opinions about the assignments for submission are also rather unambiguous for the joint group. A majority of the students state that the assignments for submission were difficult (66.1 per cent), that the work on them was stimulating (68.7 per cent), and that they were satisfied with the tutor's correction of and comments on the assignments (86.5 per cent).

Lastly we asked the students if they had felt isolated during their work with the course. We assumed that a correspondence student–working alone, with limited opportunities of obtaining support and help, and thus compelled to manage his studies completely by himself–was apt to feel isolated now and then. As shown in Table 5.13 (p 89) we cannot prove any statistically significant difference between the experimental group and the control groups as to the feeling of isolation. Studying the answers of the joint group we find that 47.5 per cent of the students declare that they have not felt isolated while 35 per cent think they have. If we test the distribution obtained against what could be expected, we find a statistically significant difference ($\chi^2 = 25.08^{***}$, df = 4). The difference implies that a greater share than expected claim no feeling of isolation whereas a smaller share state that they have experienced that feeling. The results do not definitely support the opinion that correspondence students experience themselves as being isolated in their work.

To sum up we can establish that the differences proved between the experimental group and the control group in this part of the investigation indicate that the experimental students to a greater extent think that their expectations of the course in Economics have been surpassed, that their interest in the subject has increased, that their knowledge of the subject has increased considerably, and that the way of studying has been very satisfying. The only experimental, independent variable is the telephone tutoring. It has obviosly been effective in these respects.

5.1.3 Interrelations and interaction

As is evident from section 5.1.1, there are no statistically significant differences between experimental and control group as to the variables achievement and study time. We have consequently no possibility of proving that the experimental variable–the telephone tutoring–has affected achievement or study time in this experiment.

We can, however, investigate if any background variable or the students' attitudes to the studies and the way of studying interact with achievements and study time in such a way that some of these variables brought together could serve as a guide for another standpoint in this matter.

We have performed two-way analyses of variance using achievement (measured by means of the final test only) and study time as dependent variables, and background data and attitudes as independent variables. In all the analyses of variance grouping–i.e. experimental or control groups–has been one of the independent variables, as the grouping of the students enables us to express an opinion about the experimental variable–the telephone tutoring. All together 42 analyses of variance have been performed and only 5 of them show significant effects of variability. In no case do we find variability attributable to grouping, or to any background variable, or to the interaction of any of the two independent variables statistically significant. Only when we combine grouping and attitude variables do we find significant differences. We will illustrate them below.

The first difference is found when we use the students' opinions of the extent to which their expectations of the course have been met.

Table 5.14 Summary of analysis of variance for grouping and expectations. Achievements of the students of Economics.

	SS	df	MS	F	p	ω^2
Main effects	5.55	4	1.39	2.81	*	.13
A Grouping	1.23	1	1.23	2.49	n.s.	
B Expectations	4.60	3	1.53	3.11	*	.11
Interaction	2.83	3	.94	1.91	n.s.	
Residual	32.34	66	.49			
Total	40.72	73	.56			

Table 5.15 Means of achievements according to Table 5.14

	Expectations					
	Surpassed by far	Surpassed to some extent	Came up to	Hardly came up to	Not came up to at all	m_A
Exp.	3.50 (2)	3.90 (10)	4.07 (28)	3.67 (3)	–	3.69
Contr.	3.00 (3)	2.67 (3)	3.96 (24)	4.00 (1)	–	3.73
m_B	3.20	3.62	4.02	3.75	–	3.88

Comparing the value of F obtained with the appropriate critical value of F we find that the variablility attributable to expectations is statistically significant but that the variablility attributable to grouping is not. Neither is there any variability attributable to the interaction of the two independent variables which can be considered statistically significant. In the attitude variable it is primarily the alternative "surpassed to some extent" that contributes to the significant difference. Students in the control group who have the opinion that the course surpassed their expectations to some extent achieve less than students who have other opinions.

A question where the analysis of variance indicates effects of interaction of the independent variables is the one that asks the student to state their opinions about the course material and to state if they found it inspiring or not.

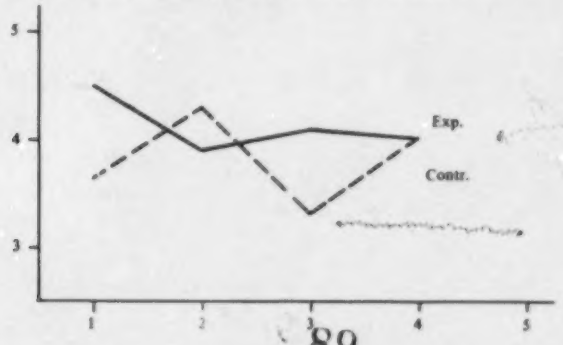
Table 5.16 Summary of analysis of variance for grouping and attitudes to the course material. Achievements of the students of Economics

	SS	df	MS	F	p	ω^2
Main effects	1.99	4	.50	.97	n.s.	
A Groups	.43	1	.43	.84	n.s.	
B Course material	1.03	3	.34	.67	n.s.	
Interaction	5.20	3	1.73	3.39	*	.12
Residual	33.53	66	.51			
Total	40.72	73	.56			

Table 5.17 Means of achievements according to Table 5.16

	Attitudes to the course material					
	Very inspiring (1)	Rather inspiring (2)	Neither nor (3)	Rather dull (4)	Very dull (5)	m_A
Exp.	4.50 (2)	3.90 (29)	4.10 (10)	4.00 (2)	–	3.96
Contr.	3.63 (8)	4.30 (10)	3.33 (11)	4.00 (2)	–	3.73
m_B	3.80	4.00	3.68	4.00	–	3.88

Chart 5.18 Graphical representation of the means in Table 5.17



As shown in Table 5.16, neither the variability attributable to grouping nor that to attitude can be considered statistically significant whereas the variability attributable to the interaction of the two independent variables indicates significance. Obviously the experimental students who regard the course material as very inspiring or are of a neutral opinion achieve bet[illegible]al test than corresponding students in the control group. Experimenta[illegible]nts finding the course material rather inspiring–thus taking an intermediate position–achieve less than the corresponding students in the control group.

A third question giving differences in the analysis of variance concerns the students' opinions about the way of studying. In this case we get significant differences for the two independent variables separately but no effects of interaction.

Table 5.19 Summary of analysis of variance for grouping and attitudes to the way of studying. Achievements of the students of Economics

	SS	df	MS	F	p	ω^2
Main effects	6.12	4	1.53	3.00	*	.15
A Group	2.65	1	2.65	5.19	*	.06
B Study form	5.17	3	1.74	3.41	*	.12
Interaction	.77	3	.26	.51	n.s.	
Residual	33.83	66	.51			
Total	40.72	73	.56			

Table 5.20 Means of achievements according to Table 5.19

	The way of studying was . . .					
	Very good	Quite good	Neither nor	Poor	Very poor	m_A
Exp.	3.37 (26)	4.15 (12)	4.33 (3)	5.00 (2)	–	3.96
Contr.	3.40 (10)	3.93 (12)	3.75 (4)	4.00 (5)	–	3.73
m_B	3.67	4.04	4.00	4.25	–	3.88

The result is rather remarkable. It implies that the less positive opinion about the way of studying the students hold the better they achieve. We cannot prove the variability attributable to the interaction of the two independent variables to be statistically significant. Thus, the result is the same in the experimental group and the control group. We cannot find any plausible explanation of these findings other than that the small number of students for two of the items is probably the cause.

In the two remaining cases where the results from the analyses of variance give rise to a discussion we use the study time as the dependent variable and relate it to the independent variables. Also these cases concern the students' attitudes to their studies and the way of studying.

The first case deals with the question if the students find the course material inspiring or not.

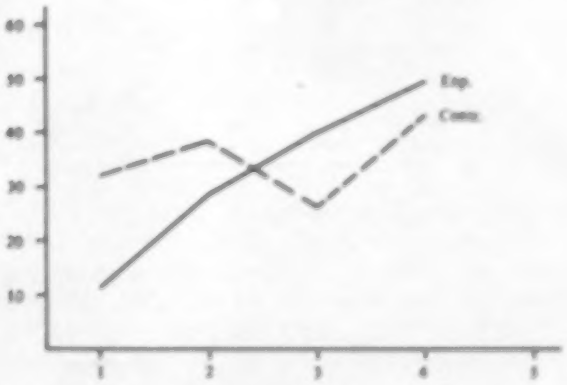
Table 5.21 Summary of analysis of variance for grouping and attitudes to the course material. Study time of the students of Economics

	SS	df	MS	F	p	ω^2
Main effects	847.97	4	211.99	1.05	n.s.	
A Group	12.96	1	12.96	.06	n.s.	
B Study material	843.32	3	281.10	1.40	n.s.	
Interaction	2,130.75	3	710.25	3.53	•	.12
Residual	14,086.80	70	201.24			
Total	17,065.52	77	221.63			

Table 5.22 Means of study time according to Table 5.21

	Attitudes to the course material					
	Very inspir-ing (1)	Rather inspir-ing (2)	Neither nor (3)	Rather dull (4)	Very dull (5)	m_A
Exp.	12.00 (3)	28.60 (30)	40.00 (10)	49.60 (2)	–	30.96
Contr.	32.00 (8)	37.60 (10)	26.36 (13)	43.30 (2)	–	32.16
m_B	26.55	30.85	32.30	46.45	–	31.48

Chart 5.23 Graphical representation of the means in Table 5.22



Neither the variability attributable to grouping nor to attitude can be considered statistically significant, whereas the variability attributable to the interaction of the two variables indicates significance. There are, in other words, effects of interaction. Studying the means of the study time for the two groups we find that the

students in the experimental group have a constantly increasing study time in relation to their opinions about the course material. Students finding the course material very inspiring have the shortest study time while those who find it rather dull have the longest study time. For students in the control group the state of things is almost the opposite with longer study time for those who consider the course material inspiring than for those who have a more neutral opinion.

The second case is when we use the students' attitudes to the correction of and comments on the assignments for submission as the second independent variable.

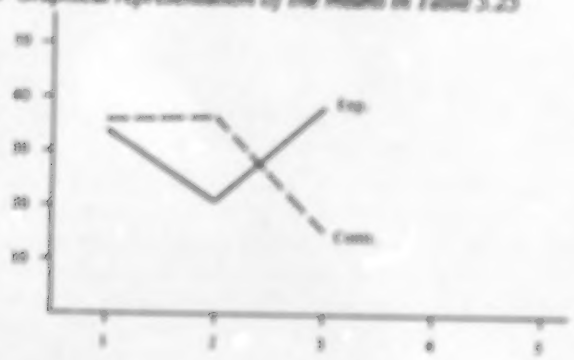
Table 5.24 Summary of analysis of variance for grouping and attitudes to the correction of and comments on the assignments for submission. Study time of the students of Economics

	SS	df	MS	F	p	ω^2
Main effects	1,357.95	5	271.59	1.80	n.s.	
A Group	36.97	1	36.97	.25	n.s.	
B Assignments	1,425.82	4	356.45	2.45	n.s.	
Interaction	1,254.01	2	627.00	4.30	*	.10
Residual	10,215.10	70	145.93			
Total	12,827.06	77	166.59			

Table 5.25 Means of study time according to Table 5.24

	Attitudes to the correction of and comments on assignments for submission					
	Very inspiring (1)	Rather inspiring (2)	Neither nor (3)	Rather disenthusiastic (4)	Very disenthusiastic (5)	m_A
Exp.	33.80 (30)	21.10 (12)	38.50 (2)	–	50.00 (1)	30.96
Contr.	35.60 (20)	36.36 (6)	16.00 (6)	35.50 (1)	–	32.16
m_B	34.52	26.19	21.63	35.50	50.00	31.46

Chart 5.26 Graphical representation of the means in Table 5.25



We find that there is no difference in study time between the students in the two groups who are very satisfied with the tutor's corrections of and comments on their assignments for submission. But among those who are only fairly satisfied the students in the experimental group have a shorter study time than the corresponding students in the control group. The state of things is the opposite for students holding a more neutral position.

5.1.4 Summary

In this section we have reported results of comparisons between the experimental group and the control group in an experiment with students taking a correspondence course in Economics. Summing up, we cannot prove any statistically significant differences between the groups in achievement and study time. Consequently, the experimental variable – the telephone tutoring – seems to give no effect in these respects.

We could, however, find certain differences concerning the students' attitudes to their studies and the way of studying. Studying the interaction between the dependent variables achievement and study time and various independent variables we also find differences only when one of the variables of attitudes is used as one of the independent variables. Our conclusion is that at the end of this experiment differences between the experimental group and the control group can be proved only in the affective domain. If the experimental variable – the telephone tutoring – has had any effect it is in this domain.

5.2 Results from the group studying French

In this section we present the results from the English sample. These students studied a course in French. It should be observed that when we mention the results at completion of this course we refer to the point when the students had sent in five sets of assignments for submission (cp section 3.3.1, p 43).

5.2.1 Achievements and study time

Analogous to the presentation of the results from the group studying Economics (Section 5.1.1), we first present the results from both the assignments for submission and the final test. The means of each of these variables have been analysed by t-test and the results are presented in Table 5.27.

Testing the differences of means of the achievement we cannot prove that there are differences between the experimental group and the control group as to achievement measured by the assignments for submission. The fact that we cannot prove any differences between the two groups regarding the first set of assignments indicates that the groups do not differ in achievement at the initial phase. The same was found about the students of Economics.

Table 5.27 Comparisons of achievements on assignments for submission and final test. Students of French.

Events	Group	n	m	s	t	p
Assignments 1	Exp	111	3.04	.99	.29	n.s.
	Contr	79	3.10	.91		
Assignments 2	Exp	102	3.21	1.02	1.68	n.s.
	Contr	58	2.90	.91		
Assignments 3	Exp	95	3.19	1.01	1.82	n.s.
	Contr	59	3.00	.99		
Assignments 4	Exp	76	3.16	.91	.37	n.s.
	Contr	61	3.09	1.13		
Assignments 5	Exp	67	3.27	.98	1.16	n.s.
	Contr	56	3.03	1.09		
Final test	Exp	66	3.21	.91	2.50	*
	Contr	56	2.79	.97		

There is, however, a statistically significant difference in the results of the final test. This implies that the students in the experimental group achieve better than the students in the control group. As the independent variable in our design is the telephone tutoring, it is evident that the telephone tutoring contributed towards a better achievement for the students studying French.

In what way, then, did the experimental design influence the study time?

Table 5.28 Study time in weeks. Students of French.

Group	n	m	s	t	p
Exp	67	13.49	7.13	-1.62	n.s.
Contr	56	20.05	9.13		

As to the study course Economics we cannot prove that there is any difference in study time between the experimental and the control groups.

Thus, we can summarize that in this experiment with correspondence students taking a course in French the telephone tutoring, being the experimental variable, has contributed towards a better achievement but cannot be proved to have influenced the study time.

5.3.3 Attitude to the studies

Analogous to what was described for the students of Economics we will in this section report the students' attitude to their studies and the way of studying. The statistical procedures are the same in both cases.

The distributions in the experimental group and the control group are reported separately in Tables 5.29-5.38 in the appendix. In Table 5.39 we present only a summary of the results from the chi-square analyses.

Table 5.39 A summary of chi-square analyses groups: attitude form of questionnaire: attitude. Students of French.

Variable	Exp-Cons: comparisons of Fulfilles vs Drop-outs (	Exp group Fulfilles - Drop-outs (	Cont group Fulfilles - Drop-outs (
1 importance	n.s	n.s	n.s
2 interest	*	**	**
3 knowledge	*	***	**
Course material			
4 difficulties	n.s	n.s	n.s
5 meaning/aim	n.s	n.s	n.s
Assignments			
6 difficulties	n.s	n.s	n.s
7 meaning/aim	n.s	n.s	n.s
8 examination of	n.s	n.s	n.s
9 study form	n.s	n.s	n.s
10 solution	n.s	n.s	n.s

Comparing the scores from the two groups we find statistically significant differences in two comparisons only. The first one concerns the question if the students think that their interest in French increased or diminished during the course. The difference between the groups in the aspect ($\chi^2 = 9.10^{**}$, $df = 3$) implies that a greater share of the experimental students than of the control students believe that their interest has increased very much. We can also note that a majority of the students in the joint group claim increased interest (67.9 per cent). But despite this, the positive opinion is obviously even stronger in the experimental group. Comparing the fulfilles and the drop-outs we find statistically significant differences in both the experimental group and the control group. In both groups a greater share of the fulfilles than of the drop-outs state that their interest in French increased during the studies.

The second one concerns the students' opinions about their gain of knowledge of the subject. Totally, both groups included, an absolute majority of the students think that their knowledge has increased (96.9 per cent) and 55.1 per cent regard it as considerably increased. A statistically significant difference appears between

[illegible]

[illegible]

[illegible]

In all the analyses where achievement has been the dependent variable, the variability attributable to grouping—experimental and control group—can be considered statistically significant. In no case where study time is used as the dependent variable can we prove any statistically significant differences, neither concerning single variables nor concerning interaction of two variables.

There are reasons to comment on some of the 21 analyses where achievement is used as the dependent variable. In all of them the variability of grouping is statistically significant which is quite logical. But 6 of the analyses indicate other effects which are interesting to discuss.

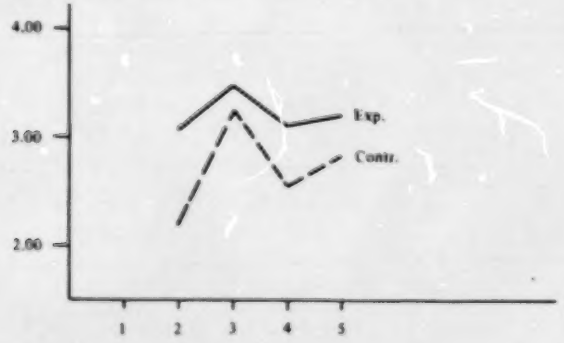
Table 5.40 Summary of analysis of variance for grouping and age of the students. Achievements of the students of French.

	SS	df	MS	F	p	ω^2
Main effects	10.36	5	2.07	2.35	•	.11
A Group	5.75	1	5.75	6.53	•	.06
B Age	4.69	4	1.17	1.33	n.s.	
Interaction	1.23	3	.41	.47	n.s.	
Residual	80.25	91	.88			
Total	91.84	99	.93			

Table 5.41 Means of achievements according to Table 5.40

	Age of the students					
	1	2	3	4	5	
	≤ 20	21-30	31-40	41-50	> 50	m_A
Exp	3.00 (3)	3.08 (13)	3.47 (15)	3.13 (15)	3.20 (20)	3.21
Contr	–	2.20 (4)	3.25 (8)	2.45 (11)	2.82 (11)	2.75
m_B	3.00	2.88	3.39	2.85	2.88	3.05

Chart 5.42 Graphical representation of the means in Table 5.41



Besides the variablility attributable to grouping there is a joint, additive effect of grouping and age. Chart 5.42 visualizes the interrelation between the two independent variables. It is obvious that in both groups the difference in achievement is smallest in the age group 31-40. No effect of age itself can be proved but the combination of grouping and age gives an effect. This could mean that in the age group 31-40 telephone tutoring had less effect on achievement than in the other age groups.

According to these analyses the age of the students combined with grouping is the only background variable that seems to have influenced the students' achievements. On the other hand we find significant differences when we use one of the attitudes as the second independent variable. The same applied to the students of Economics.

Table 5.43 Summary of analysis of variance for grouping and expectations. Achievements of the students of French.

	SS	df	MS	F	p	ω^2
Main effects	10.07	4	2.52	2.96	*	.11
A Group	5.16	1	5.16	6.07	*	.06
B Expectations	5.14	3	1.71	2.01	n.s.	
Interaction	4.08	3	1.36	1.60	n.s.	
Residual	78.60	92	.85			
Total	92.76	99	.94			

Table 5.44 Means of achievements according to Table 5.43

	Expectations					
	Surpassed by far	Surpassed to some extent	Came up to	Hardly came up to	Not came up to at all	m_A
Exp	3.47 (34)	2.97 (28)	2.50 (2)	3.00 (2)	–	3.21
Contr	3.06 (15)	2.50 (17)	2.50 (2)	–	–	2.75
m_B	3.34	2.79	2.50	3.00	–	3.05

Table 5.43 indicates that the variablility attributable to grouping is statistically significant, whereas the variablility attributable to expectations is not. But there is a joint, additive effect here, too. In both groups the achievement decreases to the same extent that the students declare that their expectations of the course have not been met. Nevertheless there is a difference in achievement between the groups.

Another question concerned the way of studying.

Table 5.45 Summary of analysis of variance for grouping and attitudes to the study form. Achievements of the students of French.

	SS	df	MS	F	p	ω^2
Main effects	12.68	4	3.17	3.69	**	.14
A Group	4.02	1	4.02	4.67	*	.04
B Study form	7.75	3	2.58	3.01	*	.08
Interaction	.20	2	.10	.12	n.s.	
Residual	79.87	93	.86			
Total	92.76	99	.94			

Table 5.46 Means of achievements according to Table 5.45

	Attitudes to the way of studying					
	Very good	Quite good	Neither nor	Poor	Very poor	m_A
Exp	3.47 (34)	2.96 (28)	2.50 (2)	3.00 (2)	–	3.21
Contr	3.06 (15)	2.50 (17)	2.50 (2)	–	–	2.75
m_B	3.34	2.79	2.50	3.00		3.05

As previously a difference appears between the experimental group and the control group but there is also a significant difference in achievement between students holding different opinions about the way of studying. Those who are more positive to the study form achieve better than those who are less positive.

We get similar effects when we use analysis of variance to study the interaction of achievement, grouping and supposed feelings of isolation.

Table 5.47 Summary of analysis of variance for grouping and supposed feeling of isolation. Achievements of the students of French.

	SS	df	MS	F	p	ω^2
Main effects	15.42	5	3.08	3.77	**	.17
A Group	3.54	1	3.54	4.32	*	.04
B Isolation	10.49	4	2.62	3.20	*	.11
Interaction	2.04	3	.68	.83	n.s.	
Residual	75.30	91	.82			
Total	92.76	99	.94			

Table 5.48 Means of achievements according to Table 5.47

	Felt isolated					
	To a great extent (1)	To some extent (2)	Uncertain (3)	Hardly (4)	Not at all (5)	m_A
Exp	–	2.87 (23)	3.00 (4)	3.25 (11)	3.50 (28)	3.21
Contr	2.00 (2)	2.42 (11)	3.50 (2)	2.43 (7)	3.23 (12)	2.75
m_B	2.00	2.71	3.17	2.95	3.41	3.05

We asked the students if they felt isolated when studying by correspondence. When we examine the result of the analysis of variance we find significant differences between the experimental group and the control group but there is also a statistically significant difference when the students' opinions about their feelings of isolation are added to grouping. This means that the less isolated a student feels the better he achieves, a relation that is obvious in both the experimental group and the control group.

Another two analyses will be discussed. For them we have used two aspects of the students' attitudes to the assignments for submission as the second independent variable, the first being grouping as before.

Table 5.49 Summary of analysis of variance for grouping and attitudes to the assignments for submission: difficult/easy. Achievements of the students of French.

	SS	df	MS	F	p	ω^2
Main effects	11.91	4	2.98	3.43	**	.13
A Group	3.36	1	3.36	3.86	*	.04
B Assignments	6.98	3	2.33	2.68	n.s.	
Interaction	.30	2	.15	.18	n.s.	
Residual	80.55	93	.87			
Total	92.76	99	.94			

Table 5.50 Means of achievements according to Table 5.49

	The assignments for submission were . . .				
	Very difficult	Difficult	Neither nor	Rather easy	Very easy	m_A
Exp	–	3.20 (5)	3.05 (43)	3.59 (17)	4.00 (1)	3.21
Contr	–	3.00 (4)	2.59 (25)	3.40 (5)	–	2.75
m_B	–	3.11	2.88	3.55	4.00	3.05

Table 5.51 Summary of analysis of variance for grouping and attitudes to the assignments for submission: stimulating/dull. Achievements of the students of French.

	SS	df	MS	F	p	ω^2
Main effects	8.82	4	2.21	2.48	*	.05
A Group	4.75	1	4.75	5.34	*	.05
B Assignments	3.89	3	1.30	1.46	n.s.	
Interaction	.50	2	.25	.28	n.s.	
Residual	83.44	93	.89			
Tota	92.76	99	.94			

Table 5.52 Means of achievements according to Table 5.51

	The assignments for submission were . . .					
	Very stimu-lating	Rather stimu-lating	Neither nor	Rather dull	Very dull	m_A
Exp	3.57 (14)	3.16 (36)	2.93 (15)	4.00 (1)	–	3.21
Contr	3.00 (8)	2.65 (19)	2.75 (7)	–	–	2.75
m_B	3.36	2.98	2.87	4.00	–	3.05

These two analyses deal with the question if the students consider the assignments easy or difficult, and if they find them stimulating or dull. In both cases we find significant differences between the experimental and control groups when the independent variables are treated together whereas the attitude variables separately give no differences. But there is the additive effect and together with grouping we find a parallel connection. In both groups we can establish that the easier the students find the assignments the better they achieve, and the more stimulating they find the assignments the better they achieve.

5.2.4 Summary

Summarizing the results gained in this experiment with correspondence students taking a course in French, we can establish that there is a statistically significant difference in achievement measured by a final test between the experimental group and the control group. The result implies that the experimental variable has had a positive effect. Students receiving telephone tutoring achieve better than students who got no telephone tutoring. We can, however, find no difference in study time.

As regards the students' attitudes to their studies and the way of studying we can prove statistically significant differences only in the cases concerning their interest

in and knowledge of the subject. Experimental students maintain to a greater extent than students in the control group that their interest in and knowledge of French has increased. In the remaining questions we cannot prove any differences.

When we study the interaction and interrelations between different variables we find that grouping—i.e. belonging to experimental or control group—gives significant differences in achievement when it is compared simultaneously with background variables and variables of attitudes. In some cases we also find a co-variation with other variables. We find that achievement increases the more positive the students are to the way of studying and the less isolated they say they feel. We can, of course, change the interpretation completely as it is impossible to decide the direction of the causality.

6 Discussion

6.1 Background and design

The purpose of the investigation the results of which are presented in this thesis is to shed some light on the effects of supplementary telephone tutoring in correspondence education. The design has been experimental, involving comparisons between groups of students selected at random and studying conventional correspondence courses. The experimental students have had access to telephone tutoring, the others have not.

Correspondence education is an instructional form which can be used to advantage in expanding adult education. It can reach people wherever they live and the students can study at their own pace and adapt their studies to their working conditions and their family situation.

Discussing the advantages as well as the disadvantages of this instructional form we have referred to previous research in the field of correspondence education and stressed the role played by the preproduced course material. The study material used by the student is developed and adapted for independent study and therefore well suited for this purpose from an educational point of view. Correspondence education has certain drawbacks, however. The students study mainly on their own without any direct contact with a tutor. The communication taking place is in fact of two kinds. On one hand there is a form of communication from the "teacher" who wrote the course material. On the other hand the student maintains two-way communication with a tutor by means of the assignments for submission, which he answers and sends to the school for examination. But this two-way communication suffers from delay. Direct, immediate feedback is impossible to attain with this form of communication. This lack is a fundamental disadvantage in the instructional form of correspondence education.

In this context we have made comparisons with what happens in a conventional classroom situation, where opportunities are afforded for social interaction. It has been proved in some studies that the more a student gets an opportunity to take part in and influence the interaction the better he achieves.

As this opportunity of interaction is lacking in the pure form of correspondence education we found it important to initiate an experiment where some kind of direct contact between tutor and student was made possible. The more extensive systems of distance education developed all over the world – the most widely discussed is the British Open University – use correspondence courses as one of the essential components of instruction and quite often combine correspondence education with various forms of direct contacts. In many cases meetings with teacher-supervised oral instruction are used.

For the experiment reported here we decided to combine correspondence education with systematic telephone tutoring. The telephone has been used in different ways as an instructional aid, mostly to supply information from a teacher to a student or a group of students. Four ways of using the telephone for instructional purposes have been reviewed in this thesis. Telelecturing implies that a complete lesson is transmitted by means of a telephone line. Teleteaching provides single students with an opportunity to participate in the instruction at home, thus helping them to keep up with the class despite temporary handicaps which prevent them from being present in the classroom. In dial-access, a third method of application, the telephone can be regarded as a channel for transmitting very specific, occasional information stored for particular purposes.

The way of application used in our experiment we call telephone tutoring. The telephone is used as a supplement to a correspondence course, the primary information being given to the student by the written course material. By telephone calls a tutor reinforces the two-way communication, which is maintained by letters in the usual way, and encourages the student to participate in the instructional process. In this way opportunities are supplied for interaction.

In practice we have adopted the following method. The student takes a correspondence course which he studies in a conventional manner. When he has received a set of assignments for submission back from the school - corrected and commented on - a tutor phones him. Starting from the returned assignments the tutor and the student discuss various questions. No restrictions concerning the content of the calls are imposed. According to the plans the students should receive one call in connection with each set of assignments for submission. All calls exchanged have been recorded and subjected to a content analysis.

Two different correspondence courses have been used - one in Economics and one in French - both intended for adult beginners. The investigation includes two parallel experiments, one for each course, the one course being studied in Sweden (Economics) and the other in Great Britain (French). The only experimental variable has been the telephone tutoring.

The students participating in the separate experiments were divided at random into two groups, one experimental group and one control group. We can suppose that the two groups within each experiment are equal regarding a number of background variables such as sex, age, marital status, educational level, occupation, and experience of correspondence study. The groups have been tested against these variables and we could not prove that they differed.

6.2 Drop-outs

The problem of drop-outs is very great in this investigation. In adult education in general as well as in correspondence education the drop-out frequency varies but is mostly great, probably owing to the voluntary nature both of the application procedure and of participation. We can not, however, disregard the possible explanation that the instruction is badly adapted to the interests and needs of adults.

Further, a student may sometimes reach his own goal before the goal of the course is fulfilled and therefore not finish the course. He is then regarded as a drop-out in the registration system of the school since he has started a course but not completed it according to the school's criteria. This type of drop-out which apparently is not a real drop-out is very hard to trace. Still, it is probably a very real kind.

In our investigation about 30 per cent of the enrolled students were dropped out with-out stating why they did not complete their studies within the period of time set up for the experiments (almost two years). Whatever the reason, these students – whom we call drop-outs 2 – constitute a real drop-out from the point of view of our investigation. They are more frequent among the Swedish students studying Economics (31 per cent) than among the English students taking a course in French (22 per cent) (cp. Table 3.16 p. 55). The difference between the two courses can to a certain extent be explained by dissimilarities in the procedure of registration at the two schools. All the language students had to answer at least one set of assignments for submission in order to be registered as correspondence students and eligible for the experiment. The Economics students could be selected at the very time of application since their school caters only for correspondence students.

Certain data about the students called drop-outs 2 are known thanks to an enrolment questionnaire. This information has been used for a separate description of the background variables and in discussing the content analysis of the telephone calls.

Concerning achievement, study time, and attitudes to studies and the way of studying, information from this drop-out group is missing. Where such data are analysed drop-outs 2 have been excluded from the investigation.

One more type of drop-outs exists. About these drop-out students, called drop-outs 1, we have more information since they have also answered a drop-out questionnaire. We know why they have not completed the course and we know their attitudes to the studies and the way of studying, but information about their achievements and their study time is missing. They share of the total number of participants is 23 per cent in the one experiment (Economics) and 23 per cent in the other (French).

Owing to the high drop-out frequency we have complete information from about 43 per cent of the students enrolled. In the study course Economics about 33 per cent remain in each of the experimental and the control groups while in the language course about 60 per cent remain in the experimental group and about 40 per cent in the control group.

It is quite obvious that a drop-out rate as high as that will affect our possibilities to draw general conclusions from the results of the investigation. The conditions are more favourable in the language course than in the course in Economics but in both cases we must be exceedingly cautious. There are indeed reasons for asking why so few students completed their correspondence courses during the period of nearly two years during which the investigation took place. As to the real drop-outs (drop-outs 2) we know nothing about their reasons for dropping out.

A mere 6 per cent of the remaining non-completers (drop-outs 1) reported that they had definitely stopped studying, whereas the rest stated that they had only made a temporary break caused by work, shortage of time etc. they intended to resume their studies and complete the course they had started. The share of completers might have been greater if we had extended the investigation, but the question is for how long. Practical problems made it impossible for us to continue the data collection any further.

However, neither type of drop-out seems to be systematic in relation to background data. We cannot prove that the drop-out groups differ from the completer groups in their distributions over the background variables but this does not mean that they are equal in this respect. Nevertheless, the result of the testing gives us a somewhat more reliable basis for careful generalizations when we discuss the findings of the investigation.

6.3 Problems and results

Information has been collected in order to answer certain questions and to test certain hypotheses (cp Chapter 2). The questions concern the telephone conversation taking place between tutors and students. Our answers to these questions will be based on the results gained from the experimental groups in the two experiments. In a few cases we have confronted the students in the control groups with hypothetical questions: receiving telephone tutoring. The hypotheses raised concern the effects of the experimental situation, the experimental, independent variable being telephone tutoring. To be able to test these hypotheses we have utilized the experimental-control group method.

The design used provides satisfactory opportunities to claim close of causal validity. The independent variable is clearly defined and the effects we gain in the dependent variables as achievement, study time, and attitudes to the studies and the way of studying can be brought back to the independent, experimental variable.

An essential task in this investigation is to shed light on students' reactions to telephone tutoring and to find out what educational functions it fulfils. Data for these purposes have been collected partly by a content analysis of the recorded telephone calls, partly by a post-questionnaire asking questions about the telephone tutoring.

Having discussed content analysis as a research method we decided to use a qualitative method of analysis. In order to study the latent content of the calls as it was verbalized by the tutors and the students we categorized the content in its context. The outcomes of the analysis finally enabled us to quantify the result.

Two different analyses were performed. The main analysis was carried out by means of a schedule of categories, each third of the call being scored according to its main content. In a subordinate analysis we studied one single content area, classifying each call as containing or not containing a discussion of a personal or social problem at any time during the call and to any duration.

The first question asked was: How do students receiving telephone tutoring in connection with their assignments for admission exams in the form of correspondence courses? According to our results the students' attitude to the telephone tutoring is positive as a whole. A majority of the experimental students believe that they experienced the telephone contacts with their tutor positively, while only a very small share of them have a negative attitude to the calls. The students found it easy to talk to their tutor and they did not feel embarrassed by the telephone calls. Rather the fact that tutors are concerned about their progress stimulated them to their study work. The students' interest in the subject seems to have increased owing to the telephone calls. These findings indicate that the calls as changed have served an educational function, effectively influencing the students in a positive direction. This primarily motivational effect must not be neglected.

Another relevant aspect investigated is to what extent the telephone calls according to the students helped them in their work with the course material. In this respect we find a difference between the two groups studying different subjects. The students expressed any marked negative opinion, but the students studying French tend to a greater extent that they have been helped by the telephone calls, while the students of Economics take a more neutral attitude. Although the difference may be back on national distinctions as well as on subject distinctions, we think it depends on the characteristics of the subjects and not of the national samples. In Economics the tutor could very often support the students by referring to a section in the course material where the student himself could learn from the text. In French the telephone conversation may often concern pronunciation or the structure of sentences, problems unable to be discussed especially face to face conversation. Thus, the language students may have got assistance which could not possibly have been provided by other means. The half of the students of French are of the opinion that the telephone calls helped them with learning tasks which they could not otherwise have coped with, whereas only 10 per cent of the students of Economics have a corresponding attitude.

The interpretation above seems to be contradicted by the circumstance that a greater share of the students studying Economics than of those studying French declared that they would rather call than write to their tutor if they wanted to ask questions concerning the course. The question implied however, that the students should take the initiative to the contact and not as to the suggestions be called by the tutor. In the case it is not unlikely that national distinctions rather than subject distinctions determined the result. The differences may have arisen from different customs and practices in using the telephone as a communication means in the two countries.

The second question raised was: Do students receiving telephone tutoring in connection with their assignments for admission exams subject-related problems to the same extent when they study a general subject as when they study a foreign language? The content analyses of the telephone calls indicate that a third are to tutors and students given at those subject-related problems and that the initiative in what is treated is most often taken by the students. The explanation of these findings can be discussed. A likely explanation might be that the students

[illegible]

[illegible]

[illegible]

If these results indicate feelings of isolation is open to discussion. It would probably be rash to maintain that they do. On the other hand we cannot disregard that a student who discusses personal or social problems needs to ventilate them. If he chooses to discuss them with his tutor this might indicate that he has no one else to talk to, which could finally be interpreted as an indication of feelings of isolation. Thus, we cannot exclude the possibility that students discussing personal or social problems with their tutor feel isolated – but to what extent we cannot possibly ascertain from this analysis.

More precise information about the question at issue is to be found in the questionnaires. The students were asked if they had felt isolated during their work and 38 per cent of all who answered the question gave an affirmative reply. In this case we have compared each experimental group with the corresponding control group but we cannot prove that they differ. Consequently, the experimental variable – the telephone tutoring – does not affect the students' experiences of isolation. Nevertheless, one half of the experimental students declared in answer to another question that the telephone calls had made them feel less isolated in their study work.

The results discussed above serve at the same time to answer one of our questions and to test one of our hypotheses. Do the students discuss personal or social problems with their tutor during the telephone calls? Yes, to a certain extent. If this implies a feeling of isolation in their study work is hard to verify. It is, however, quite likely. On the other hand we cannot find that students receiving telephone tutoring look upon themselves as less isolated than those who are not given such assistance (*cp* Hypothesis IV, *p* 34).

The results referred to can be summarized to answer more fully our first question about the reactions of the students to the telephone tutoring. Their reactions are in general positive. According to the students the telephone tutoring fulfilled both motivational and instructional functions. Further evidence of the positive experience of the students is the fact that a majority of them declare that they would be prepared to pay an extra fee to have access to telephone tutoring as a supplement to correspondence courses in the future.

The second essential task in this investigation is to find out if there are any differences in achievement, in study time, and in attitudes to the studies and the way of studying between students receiving telephone tutoring and not receiving it. It is here the results from the experimental study come in. Owing to the different correspondence courses and subjects involved in the investigation we have regarded each course/subject as an experiment on its own.

Our first hypothesis concerns *the effects on achievement of the introduction of telephone tutoring*. When testing this hypothesis we found no differences in achievement between the experimental group and the control group studying Economics. Students receiving telephone tutoring achieve no better than those who had no telephone tutoring. On the other hand we found differences between the groups that studied French. In that experiment students receiving telephone tutoring achieve better than those who had no telephone tutoring. These achieve-

ments have been measured by means of a particularly developed final test covering the entire content of the course.

Thus, we have been able to prove differences in achievement in the one experiment but not in the other. The reason why is hard to state. The two subjects may be more or less suited for supplementary telephone tutoring. This assumption is supported by two circumstances mentioned before—the language students think to a greater extent than the students of Economics that they were helped by the telephone calls and they discussed to a greater extent subject-related problems with their tutor. Both circumstances play an important role as regards achievements.

But we have also noted previously that the subject-related problems discussed by the students of French mainly concerned pronunciation and the structure of sentences. The final test was written, however, and contained no test of pronunciation. Nevertheless the test results of the experimental students of French were exceptionally good. Apparently, a correspondence course in a foreign language is much improved by telephone tutoring.

It is possible to interpret the results from the course in Economics analogously. The students state to a less extent that they were helped by the telephone calls and they discussed to a less extent subject-related problems. We have also observed that the tutor when giving support had greater opportunities merely to refer the student to a certain part of the course material. Our conclusion is that telephone tutoring arranged as in these experiments is less suited for a subject belonging to the social sciences than for studies in a foreign language.

The second hypothesis raised concerns the students' study time and can be formulated: *Students receiving telephone tutoring differ as to study time from those who do not have the same opportunity.* We assumed that the telephone calls might improve not only knowledge but also motivation in such a way that the study time was reduced. We have already reported that students receiving telephone tutoring appreciated that someone cared about their study work and that they felt stimulated by the telephone calls. Still, we could find no differences in study time between the experimental group and the control group in either of the two experiments. Consequently, our hypothesis is not in accordance with the results of our experiments. The introduction of telephone tutoring neither reduces nor extends the study time.

Our third hypothesis can be formulated: *Students receiving telephone tutoring differ at the end of their studies from those who received no telephone tutoring as regards attitudes to studying and to the way of studying.* The analyses performed indicate that in both study courses the students who received telephone tutoring to a greater extent acknowledge an increased interest in and knowledge of the subject than those who got no telephone tutoring.

In the experiment with Economics we found differences between the experimental group and the control group in two other respects as well. The one case concerns the students' expectations of the course—were they surpassed or not? The other case concerns the students' attitudes to the way of studying. In both

cases a greater share of the students receiving telephone tutoring held the more positive attitude. No such differences were found between the two groups studying French.

In no other question about attitudes to the studies and the way of studying did we find differences between students receiving and not receiving telephone tutoring. These questions concerned various aspects of the study material and the assignments for submission.

The questions and hypotheses discussed here concern fundamental educational conditions. If the students experience that their interest in and knowledge of the subject has increased (as occurred in both experiments), that their expectations of the course were surpassed and that the way of studying the course was good (valid only for the students of Economics), those experiences can be as significant for the total impression of their studies as a good mark in a final test (achieved only by the students of French). The condition that discriminates between the two experimental groups and the two control groups was the offer of telephone tutoring. The effects reported have to be attributed to this condition.

The findings that no differences attributable to the experimental variable, the telephone tutoring, could be proved either in the achievements for students studying Economics or in study time in either of the two experiments made us believe that background circumstances might have come into play. Therefore we extended the analyses to test if a treatment of background variables and achievement or study time jointly could provide any guidance. The background variables used were sex, age, marital status, educational level, occupation, previous experience of correspondence education, parallel studies and motives for participating in the studies. In no case, however, did we find differences between the experimental group and the control group studying Economics, either in achievement or in study time. As to the students of French we found differences only when the dependent variable was achievement and not in the case of study time although this was tested against all the different background variables. These results confirm our conclusion that the experimental variable itself is responsible for the differences we have been able to prove.

As to our fourth hypothesis, at last, the one stating a difference between the experimental group and the control group as regards *feelings of isolation*, it was not confirmed by the results of our experiments. No difference could be proved (cp p 99).

In Table 6.1 the main problems of this investigation are listed together with the results that have been discussed in this chapter.

Table 6.1 Main problems and their answers

Problems:	Results:
Q1: reactions to telephone tutoring?	Positive in general
Q2: amount of subject-related problems discussed: language = general subject?	Much discussed; more in French than in Economics
Q3: personal or social problems discussed?	Yes, to a certain extent
Experimental group versus control group	
H I: achievement	Differences for French, no differences for Economics
H II: study time	No differences
H III: attitudes	Some differences
H IV: feelings of isolation	No differences

6.4 In conclusion

To sum up we can establish that telephone tutoring has been experienced positively by those students who received it. It has mainly been used to treat subject-related problems but it has at the same time given the students an opportunity to discuss personal or social problems, a possibility which might have contributed to the students' feeling less isolated in their study work. We have also established that with the arrangement we have used in this investigation telephone tutoring has been of greater advantage to students studying a foreign language than to students studying a subject belonging to the social sciences.

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Appendix

Table 3.21 Statements about difficulties making it hard to get forward in the course (drop-out questionnaire)

Statement	Strongly agree		Agree		Neither		Disagree		Strongly disagree	
	a	%	a	%	a	%	a	%	a	%
1. I found it very hard to start at all	0	0.0	0	0.0	0	0.0	30	55.6	24	44.4
2. I found it very hard to study when the course material was difficult to understand	0	0.0	12	44.4	10	18.5	20	40.7	22	40.8
3. I found it very hard to study when other work hindered me	27	50.7	20	37.0	0	0.0	0	0.0	1	1.1
4. I found it very hard to study when the course material seemed dull	2	3.7	12	22.2	12	22.2	26	47.2	22	40.7
5. I found it very hard to study when I felt I had not enough time	20	36.4	22	40.7	10	18.5	10	18.7	2	3.7
6. I found it very hard to work out the answers to the questions in the text (or gave incorrect answers)	0	0.0	0	0.0	12	22.2	27	50.0	20	37.0

Table 3.27 Awareness about various different aspects of the campaign among [illegible]

Awareness	Overnight agency		Agency		Overnight Chocolate		Shopping		Overnight shopping	
	a	b	a	b	a	b	a	b	a	b
1. Is this course, there should be given out [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2. Is this course, there should be [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3. The [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4. The campaign [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5. There should be an agency [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6. There should be an agency [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 3.23 The distribution of Fulfillers, Drop-outs 1 and Drop-outs 2 on the background variables

F = Fulfillers D1 = Drop-outs 1 D2 = Drop-outs 2

Table 3.23a Sex distribution

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Male	30	32	27	89	20	21	23	64	41	11	18	70	29	20	8	57
Female	13	16	11	40	11	10	9	30	25	6	10	41	5	5	4	14
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23b Age distribution

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
⩽20	7	7	4	18	4	4	5	13	2	1	1	4		2		2
21 – 30	17	19	16	52	12	13	18	43	13	4	10	27	5	5	4	14
31 – 40	13	13	7	33	10	10	8	28	18	5	8	31	10	5	3	18
41 – 50	4	7	7	18	3	3	1	7	12	4	3	23	9	6	2	17
>50	2	2	4	8	2	1		3	16	3	4	23	10	6	3	19
Σ	43	48	38	129	31	31	32	94	65	17	26	108	32	24	12	70

Table 3.23c Marital status

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Unmarried	20	23	19	62	16	17	19	52	25	6	12	43	12	9	5	26
Married	23	25	19	67	15	14	13	42	41	11	16	68	22	16	7	45
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23d Study situation

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Working full-time	38	42	33	113	30	29	29	88	50	14	21	85	25	21	10	56
Not working full-time	5	6	5	16	1	2	3	6	16	3	7	26	9	4	2	15
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23e Occupational categories

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Cat. 1	12	13	12	37	10	8	9	27	20	6	7	33	12	9	4	25
Cat. 2	17	20	17	54	13	12	12	37	20	5	7	32	9	7	4	20
Cat. 3	10	10	7	27	8	10	8	26	17	4	8	29	8	6	3	17
Cat. 4	4	3	1	8		1	5	6	9	2	6	17	5	3	1	9
Σ	43	46	37	126	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23f Educational level

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Level 1	12	12	10	34	5	4	5	14	19	5	12	36	9	7	4	20
Level 2	11	13	10	33	10	9	12	31	17	4	7	28	12	8	6	26
Level 3	18	20	17	55	15	15	13	43	12	4	5	21	5	3	2	10
Level 4	2	3	2	7	1	3	2	6	18	4	4	26	8	7		15
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23g Previous correspondence study

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Yes	20	23	20	63	15	14	14	43	15	4	6	25	8	6	4	18
No	23	25	18	66	16	17	18	51	41	13	22	86	26	19	8	53
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23h Parallel correspondence studies

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Yes	8	11	9	28	6	5	6	17	4	1	2	7	2	1		3
No	35	37	29	101	25	26	26	77	62	16	26	104	32	24	12	68
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23i Motive factor I

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Point 1																
Point 2																
Point 3		1	1	2		2	1	3	3		1	4	1		1	2
Point 4	2	3	2	7	1	2	1	4	4	1	2	7	2	2	1	5
Point 5	9	11	8	28	3	3	4	10	12	2	6	20	8	5	3	16
Point 6	23	20	20	63	18	16	18	52	25	8	10	43	13	10	5	28
Point 7	9	13	7	29	9	8	8	25	22	6	9	37	10	8	2	20
Σ	43	48	38	129	31	31	32	94	66	17	28	111	34	25	12	71

Table 3.23j Motive factor II

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Point 1		1	1	2		1		1	1	1		2				
Point 2	4	5	4	13	2	1	2	5	4	1	2	7		1		1
Point 3	14	16	12	42	7	8	8	23	5	1	2	8	2	1		3
Point 4	13	13	12	38	15	16	17	48	20	5	8	33	7	6	2	15
Point 5	7	8	6	21	5	4	4	13	16	4	7	27	15	9	7	31
Point 6	4	5	3	12	1	1		2	12	3	5	20	7	5	2	14
Point 7	1			1			1	1	8	2	4	14	3	3	1	7
Σ	43	48	38	129	30	31	32	93	66	17	28	111	34	25	12	71

Table 3.23k Motive factor III

	Sw Exp Group				Sw Contr Group				Engl Exp Group				Engl Contr Group			
	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ	F	D1	D2	Σ
Point 1	1	1	1	3	1		1	2	5	1	3	9		1	1	2
Point 2	9	11	7	27	8	8	9	25	10	4	3	17	6	4	2	12
Point 3	16	19	14	49	9	9	7	25	18	3	7	28	6	4	3	13
Point 4	11	14	10	35	10	10	12	32	13	5	6	24	10	9	3	22
Point 5	4	2	6	12	2	2	2	6	13	3	5	21	7	5	3	15
Point 6	1	1		2	1	2	1	4	4	1	3	8	3	1		4
Point 7									3		1	4	2	1		3
Σ	42	48	38	128	31	31	32	94	66	17	28	111	34	25	12	71

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Table 4.9 In this course we have phoned you in connection with your completed exercise papers. What is your general reaction to this contact with your tutor?

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Very positive	30	28	10	23	20	31
Positive	39	36	21	48	18	28
Neither positive nor negative	28	26	12	27	16	25
Negative	2	2	1	2	1	1
Very negative	1	1	–	–	1	1
No answer	9	8	–	–	9	14
Σ	109	100	44	100	65	100

Table 4.10 Do you think that talking by phone with your tutor has been difficult or easy?

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Very difficult	–	–	–	–	–	–
Somewhat difficult	19	17	4	9	15	23
Neither difficult nor easy	38	35	20	46	18	28
Somewhat easy	23	21	12	27	11	17
Very easy	19	17	8	18	11	17
No answer	10	9	–	–	10	15
Σ	109	99	44	100	65	100

Table 4.11 Has the knowledge that your tutor will phone you made you feel embarrassed or uncomfortable?

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Always	–	–	–	–	–	–
Nearly always	4	4	1	2	3	5
Sometimes	21	19	4	9	17	26
Just the first time	26	24	10	23	16	25
Never	50	46	29	66	21	32
No answer	8	7	–	–	8	12
Σ	109	100	44	100	65	100

Table 4.12 The telephone-calls have given me encouragement in my studies

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	33	30	11	25	22	34
Agree	39	36	16	36	23	35
Uncertain	19	17	14	32	5	8
Disagree	6	6	2	5	4	6
Strongly disagree	1	1	–	–	1	2
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.13 The telephone-calls have made me feel that somebody is taking an interest in my studies

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	38	35	9	20	29	45
Agree	47	43	26	59	21	32
Uncertain	10	9	7	16	3	5
Disagree	2	2	1	2	1	2
Strongly disagree	1	1	–	–	1	2
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.14 The telephone-calls have been a disturbance to my studies

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	–	–	–	–	–	–
Agree	2	2	2	5	–	–
Uncertain	7	6	5	11	2	3
Disagree	25	23	15	34	10	15
Strongly disagree	64	59	21	48	43	66
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.15 The telephone-calls have helped me to feel less isolated

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	32	29	9	20	23	35
Agree	25	23	15	34	10	15
Uncertain	25	23	11	25	14	22
Disagree	12	11	5	11	7	11
Strongly disagree	4	4	3	7	1	2
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.16 While you have been studying this course, have you felt isolated?

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Yes, to a great extent	12	5	4	2	8	10
Yes, to some extent	83	33	54	31	29	39
Uncertain	28	11	20	11	8	10
Hardly	59	23	42	24	17	23
No, not at all	68	27	57	32	11	15
No answer	2	1	–	–	2	3
Σ	252	100	177	100	75	100

Table 4.17 The telephone-calls have stimulated my interest in studying in general

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	13	12	2	5	11	17
Agree	9	8	1	2	8	12
Uncertain	44	41	25	57	19	29
Disagree	24	22	10	23	14	22
Strongly disagree	8	7	5	11	3	5
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.18 The telephone-calls have helped me to become more interested in the subject

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	13	12	4	9	9	14
Agree	43	40	18	41	25	38
Uncertain	25	23	13	30	12	18
Disagree	10	9	4	9	6	9
Strongly disagree	7	6	4	9	3	5
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.19 The telephone-calls have made my studies more stimulating

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	15	14	6	14	9	14
Agree	42	38	17	39	25	38
Uncertain	27	25	16	36	11	17
Disagree	10	9	3	7	7	11
Strongly disagree	4	4	1	2	3	5
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.20 The telephone-calls have helped me to a better understanding of the content of the course

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	12	11	2	5	10	15
Agree	35	32	11	25	24	37
Uncertain	42	39	27	61	15	23
Disagree	7	6	2	5	5	8
Strongly disagree	2	2	1	2	1	2
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.21 The telephone-calls have helped me to identify key points in the course

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	10	9	1	2	9	14
Agree	33	30	10	23	23	35
Uncertain	32	30	19	43	13	20
Disagree	20	18	11	25	9	14
Strongly disagree	3	3	2	5	1	2
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.22 The telephone-calls made it easier to get over particular difficulties in the course

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Strongly agree	22	20	2	5	20	31
Agree	35	32	14	32	21	32
Uncertain	33	30	22	50	11	17
Disagree	6	6	4	9	2	3
Strongly disagree	2	2	1	2	1	2
No answer	11	10	1	2	10	15
Σ	109	100	44	100	65	100

Table 4.23 Do you think that telephone conversations with your tutor have helped you with anything you otherwise could not have managed?

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Yes	42	39	8	18	34	52
No	23	21	11	25	12	19
Uncertain	34	31	24	55	10	15
No answer	10	9	1	2	9	14
Σ	109	100	44	100	65	100

Table 4.24 If you had had the opportunity during your work with the course to call your tutor by telephone, do you think that it would have helped you? (Control groups)

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Yes, to a great extent	7	10	6	19	1	3
Yes, to some extent	28	41	12	37	16	45
Uncertain	14	21	7	22	7	19
Hardly	14	21	7	22	7	19
No, not at all	5	7	–	–	5	14
No answer	–	–	–	–	–	–
Σ	68	100	32	100	36	100

Table 4.25 Would you have liked to be able to phone your tutor whenever you had a problem with the course?

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Yes	84	77	43	98	41	63
No	20	18	1	2	19	29
No answer	5	5	–	–	5	8
Σ	109	100	44	100	65	100

Table 4.26 If it were necessary for you to contact your tutor about a problem encountered in the course, would you prefer to phone or to write? (Experimental groups)

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Much prefer to phone	43	40	23	53	20	31
Slightly prefer to phone	24	22	12	27	12	18
No preference	19	17	5	11	14	22
Slightly prefer to write	12	11	4	9	8	12
Much prefer to write	8	7	–	–	8	12
No answer	3	3	–	–	3	5
Σ	109	100	44	100	65	100

Table 4.27 If it were necessary for you to contact your tutor about a problem encountered in the course, would you prefer to phone or to write? (Control groups)

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Much prefer to phone	17	25	14	44	3	8
Slightly prefer to phone	12	18	7	22	5	14
No preference	11	16	4	13	7	19
Slightly prefer to write	14	20	5	16	9	25
Much prefer to write	13	19	1	3	11	31
No answer	2	3	1	3	1	3
Σ	69	100	32	100	36	100

Table 4.28 No charge has been made for this telephone service. If in the future you wanted to have the same service in other courses, would you then agree to pay a slightly higher fee? (Experimental groups)

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Yes, definitely	19	17	6	14	13	20
Probably, yes	45	42	24	56	21	32	
Probably not	24	22	14	32	10	16
No, definitely not	13	12	–	–	13	20
No answer	8	7	–	–	8	12
Σ	109	100	44	100	65	100

Table 4.29 If this opportunity – to talk to your tutor by telephone – had been available, would you then have agreed to pay a slightly higher fee? (Control groups)

	Total		Swedish sample		English sample	
	n	%	n	%	n	%
Yes, definitely	14	21	6	19	8	22
Probably, yes	25	37	9	28	16	43
Probably not	24	35	15	47	9	25
No, definitely not	5	7	2	6	3	8
No answer	–	–	–	–	–	–
Σ	68	100	32	100	36	100

Table 4.32 Chi-square analysis: background variables - initiator of the discussion in the telephone calls

Background variable	Sw. group χ^2	Engl. group χ^2	df	Sw. group p	Engl. group p
Sex	3.80	1.42	3	n.s.	n.s.
Age	5.79	7.96	4	n.s.	n.s.
Marital status	1.19	1.53	3	n.s.	n.s.
Study situation	5.82	1.79	3	n.s.	n.s.
Occupation	1.88	5.73	4	n.s.	n.s.
Educ. level	1.21	2.10	4	n.s.	n.s.
Prem. conn. studies	.29	4.46	3	n.s.	n.s.
Parallel studies	1.43	.29	3	n.s.	n.s.
Motive factor I	4.35	7.73	6	n.s.	n.s.
Motive factor II	7.96	9.80	6	n.s.	n.s.
Motive factor III	9.76	11.23	6	n.s.	n.s.

Table 4.36 Chi-square analysis: background variables - calls including a discussion of personal or social problems (from the main analysis of corpus)

Background variable	Sw. group χ^2	Engl. group χ^2	df	Sw. group p	Engl. group p
Sex	.21	1.56	1	n.s.	n.s.
Age	3.79	5.36	3	n.s.	n.s.
Marital status	.13	.55	1	n.s.	n.s.
Study situation	2.08	.15	1	n.s.	n.s.
Occupation	2.44	1.33	3	n.s.	n.s.
Educ. level	3.63	2.91	3	n.s.	n.s.
Prem. conn. studies	1.97	1.84	1	n.s.	n.s.
Parallel studies	.77	.54	1	n.s.	n.s.
Motive factor I	.79	1.74	3	n.s.	n.s.
Motive factor II	2.48	4.49	3	n.s.	n.s.
Motive factor III	2.14	5.68	3	n.s.	n.s.

Table 4.39 Chi-square analysis: background variables - calls including any discussion of personal or social problems (from the subordinate analysis)

Background variable	Sw. group χ^2	Engl. group χ^2	df	Sw. group p	Engl. group p
Sex	2.48	1.10	1	n.s.	n.s.
Age	1.01	.99	3	n.s.	n.s.
Marital status	1.13	2.19	1	n.s.	n.s.
Study situation	2.81	.91	1	n.s.	n.s.
Occupation	1.83	2.96	3	n.s.	n.s.
Educ. level	2.19	1.96	3	n.s.	n.s.
Prem. conn. studies	3.82	.19	1	n.s.	n.s.
Parallel studies	2.10	1.53	1	n.s.	n.s.
Motive factor I	4.83	3.19	3	n.s.	n.s.
Motive factor II	5.17	5.38	3	n.s.	n.s.
Motive factor III	4.93	6.10	3	n.s.	n.s.

Table 5.3 When I started the course I had certain expectations of it. I now think the course has .... (Economy)

Answer	1	2	3	4	5
Group					
Exp.	3	16	50	9	2
Control	3	2	66	6	0
χ^2	4	20	54	6	2

Answers:
1. surpassed by far my expectations
2. surpassed to some extent my expectations
3. come up to my expectations
4. hardly come up to my expectations
5. not come up at all to my expectations

Table 5.4 Starting this course my interest in the subject has .... (Economy)

Answer	1	2	3	4	5
Group					
Exp.	1	1	13	66	17
Control	0	5	52	11	2
χ^2	1	6	65	77	19

Answers:
1. diminished considerably
2. diminished a little
3. neither diminished nor increased
4. increased a little
5. increased considerably

Table 5.5 Starting this course my knowledge of the subject has .... (Economy)

Answer	1	2	3
Group			
Exp.	87	39	2
Control	13	55	8
χ^2	40	40	3

Answers:
1. increased considerably
2. increased a little
3. not increased at all

Table 5.6 The course material was .... (Economy)

Answer	1	2	3	4	5
Group					
Exp.	1	40	28	7	1
Control	0	29	13	4	0
χ^2	1	48	56	13	1

Answers:
1. very difficult
2. rather difficult
3. neither difficult nor easy
4. rather easy
5. very easy

Table 3.7 [illegible] ... [illegible]

[illegible]	1	2	3	4	5
Group					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

Table 3.8 [illegible] ... [illegible]

[illegible]	1	2	3	4	5
Group					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

Table 3.9 [illegible] ... [illegible]

[illegible]	1	2	3	4	5
Group					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

Table 3.10 [illegible] ... [illegible]

[illegible]	1	2	3	4	5
Group					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

Table 5.11 To study by means of a correspondence course was for me ... (Economy)

Answer / Group	1	2	3	4	5
Exp.	34	27	5	6	1
Control	10	18	9	10	0
Σ	44	45	14	16	1

Answers:
1. a very good way of studying
2. quite a good way of studying
3. a neither good nor bad way of studying
4. a poor way of studying
5. a very poor way of studying

Table 5.12 While you have been studying this course, have you felt isolated? (Economy)

Answer / Group	1	2	3	4	5
Exp.	5	19	10	26	13
Control	1	17	11	9	9
Σ	6	36	21	35	22

Answers:
1. yes, to a great extent
2. yes, to some extent
3. uncertain
4. hardly
5. no, not at all

Table 5.29 When I started the course I had certain expectations of it. I now think that the course has ... (French)

Answer / Group	1	2	3	4	5
Exp.	9	20	50	3	0
Control	3	9	44	3	0
Σ	12	29	94	6	0

Answers:
1. surpassed by far my expectations
2. surpassed to some extent my expectations
3. come up to my expectations
4. hardly come up to my expectations
5. not come up at all to my expectations

Table 5.30 During the course my interest in the subject has ... (French)

Answer / Group	1	2	3	4	5
Exp.	0	5	18	18	36
Control	1	6	12	22	12
Σ	1	11	30	40	48

Answers:
1. diminished considerably
2. diminished a little
3. neither diminished nor increased
4. increased a little
5. increased considerably

Table 5.31 During this course my knowledge of the subject has ... (French)

Answer / Group	1	2	3
Exp.	51	25	1
Control	26	26	1
Σ	77	51	2

Answers:
1. increased considerably
2. increased a little
3. not increased at all

Table 5.32 The course material was ... (French)

Answer / Group	1	2	3	4	5
Exp.	0	12	53	12	0
Control	1	11	39	2	0
Σ	1	23	92	14	0

Answers:
1. very difficult
2. rather difficult
3. neither difficult nor easy
4. rather easy
5. very easy

Table 5.33 The course material was ... (French)

Answer / Group	1	2	3	4	5
Exp.	14	28	35	0	0
Control	4	26	22	1	0
Σ	18	54	57	1	0

Answers:
1. very inspiring
2. rather inspiring
3. neither inspiring nor dull
4. rather dull
5. very dull

Table 5.34 The test papers/exercise papers (i.e. exercises submitted for correction by a tutor) were ... (French)

Answer / Group	1	2	3	4	5
Exp.	0	6	52	18	1
Control	1	6	37	9	0
Σ	1	12	89	27	1

Answers:
1. very difficult
2. rather difficult
3. neither difficult nor easy
4. rather easy
5. very easy

Table 5.35 Working on the test papers/exercise papers was ... (French)

Answer / Group	1	2	3	4	5
Exp.	14	41	20	2	0
Control	10	26	16	1	0
Σ	24	67	36	3	0

Answers:
1. very stimulating
2. rather stimulating
3. neither stimulating nor dull
4. rather dull
5. very dull

Table 5.36 With the tutor's correction of and comments on my answers I am ... (French)

Answer / Group	1	2	3	4	5
Exp.	59	15	3	0	0
Control	31	17	4	1	0
Σ	90	32	7	1	0

Answers:
1. very satisfied
2. rather satisfied
3. neither satisfied nor dissatisfied
4. rather dissatisfied
5. very disatisfied

Table 5.37 To study by means of a correspondence course was for me ... (French)

Answer / Group	1	2	3	4	5
Exp.	38	35	2	2	0
Control	24	23	4	2	0
Σ	62	58	6	4	0

Answers:
1. a very good way of studying
2. quite a good way of studying
3. a neither good nor bad way of studying
4. a poor way of studying
5. a very poor way of studying

Table 5.38 While you have been studying this course, have you felt isolated? (French)

Answer / Group	1	2	3	4	5
Exp.	2	29	4	13	29
Control	4	18	3	11	17
Σ	6	47	7	24	46

Answers:
1. yes, to a great extent
2. yes, to some extent
3. uncertain
4. hardly
5. no, not at all